

Design & Technology

Key Stage 2

Curriculum map





1. Philosophy

Six underlying attributes at the heart of Oak's curriculum and lessons.

Lessons and units are **knowledge and vocabulary rich** so that pupils build on what they already know to develop powerful knowledge.

Knowledge is **sequenced** and mapped in a **coherent** format so that pupils make meaningful connections.

Our **flexible** curriculum enables schools to tailor Oak's content to their curriculum and context.

Our curriculum is **evidence informed** through rigorous application of best practice and the science of learning.

We prioritise creating a **diverse** curriculum by committing to diversity in teaching and teachers, and the language, texts and media we use, so all pupils feel positively represented.

Creating an **accessible** curriculum that addresses the needs of all pupils is achieved to accessibility guidelines and requirements.



2. Units



KS2 Design & Technology is formed of 8 units and this is the recommended sequence:

Unit Title	Recommended year group	Number of lessons
1 Cooking and nutrition: healthy and varied diets	Year 3	10
2 Mechanisms: levers and linkages	Year 3	10
3 Keep it safe: shell, solid and combination structures	Year 4	10
4 Electronics: simple circuits and switches	Year 4	10
5 Cooking and nutrition: celebrating culture and seasonality	Year 5	10
6 Reactions (Control in D&T)	Year 5	10
7 3D computer aided design	Year 6	10
8 Textiles: combining different fabric shapes	Year 6	10



3. Lessons

Unit 1 Cooking and nutrition: healthy and varied diets

10 Lessons

Lesson
number

Lesson question

About the lesson

1.

What's in a packed lunch?

Pupils will learn

- how well products meet user needs and wants
- why ingredients have been chosen
- that food ingredients can be fresh, pre-cooked and processed

Lesson vocabulary

- Texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested, healthy/varied diet, planning, design criteria, purpose, user, annotated sketch, sensory evaluations

Substantive knowledge

- Know some ways to prepare ingredients safely and hygienically.

Disciplinary knowledge



- Have some basic knowledge and understanding about healthy eating and the 'Eatwell Guide'.

Equipment

- Range of relevant example foods to taste and evaluate, suitable equipment and utensils such as: knives, chopping board, weighing scales, measuring jugs, bowls, baking trays, spoons - various sizes, parchment paper, cling film

Essential additional subject-specific information

- Have used some equipment and utensils and prepared and combined ingredients to make a product.

Guidance warnings

- Equipment requiring safe usage.
-

2.

Using research to develop design criteria

Pupils will learn

- gather information about the needs and wants of particular individuals and groups
- develop their own design criteria and use these to inform their idea

Lesson vocabulary

- Texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested, healthy/varied diet, planning, design criteria, purpose, user, annotated sketch, sensory evaluations

Substantive knowledge

- Know some ways to prepare ingredients safely and hygienically.

Disciplinary knowledge

- Have some basic knowledge and understanding about healthy eating and the 'Eatwell Guide'.

Equipment

- Range of relevant example foods to taste and evaluate, suitable equipment and utensils such as: knives, chopping board, weighing scales, measuring jugs, bowls, baking trays, spoons - various sizes, parchment paper, cling film

Essential additional subject-specific information

- Have used some equipment and utensils and prepared and combined ingredients to make a product.



Guidance warnings

- Equipment requiring safe usage.
-



3.

Designing for a target market

Pupils will learn

- describe the purpose of their products
- the correct technical vocabulary for the projects they are undertaking
- work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment

Lesson vocabulary

- Texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested, healthy/varied diet, planning, design criteria, purpose, user, annotated sketch, sensory evaluations

Substantive knowledge

- Know some ways to prepare ingredients safely and hygienically.

Disciplinary knowledge

- Have some basic knowledge and understanding about healthy eating and the 'Eatwell Guide'.

Equipment

- Range of relevant example foods to taste and evaluate, suitable equipment and utensils such as: knives, chopping board, weighing scales, measuring jugs, bowls, baking trays, spoons - various sizes, parchment paper, cling film

Essential additional subject-specific information



- Have used some equipment and utensils and prepared and combined ingredients to make a product.

Guidance warnings

- Equipment requiring safe usage.
-



Pupils will learn

- select tools and equipment suitable for the task
- select materials and components suitable for the task
- make design decisions that take account of the availability of resources
- order the main stages of making
- indicate the design features of their products that will appeal to intended users

Lesson vocabulary

- Texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested, healthy/varied diet, planning, design criteria, purpose, user, annotated sketch, sensory evaluations

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Equipment

- Range of relevant example foods to taste and evaluate, suitable equipment and utensils such as: knives, chopping board, weighing scales, measuring jugs, bowls,



baking trays, spoons - various sizes, parchment paper, cling film



Essential additional subject-specific information

- Have used some equipment and utensils and prepared and combined ingredients to make a product.

Guidance warnings

- Equipment requiring safe usage.
-

5.

Using ingredients to create your ideas

Pupils will learn

- assemble, join and combine materials and components with some accuracy
- follow procedures for safety and hygiene
- use a wider range of materials and components than Key Stage 1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components

Lesson vocabulary

- Texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested, healthy/varied diet, planning, design criteria, purpose, user, annotated sketch, sensory evaluations

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Equipment

- Range of relevant example foods to taste and evaluate, suitable equipment and utensils such as: knives, chopping board, weighing scales, measuring jugs, bowls, baking trays, spoons - various sizes, parchment paper, cling film



Essential additional subject-specific information

- Have used some equipment and utensils and prepared and combined ingredients to make a product.

Guidance warnings

- Equipment requiring safe usage.
-



6.

Evaluating your product

Pupils will learn

- use their design criteria to evaluate their completed products
- identify the strengths and areas for development in their ideas and products
- consider the views of others, including intended users, to improve their work

Lesson vocabulary

- Texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested, healthy/varied diet, planning, design criteria, purpose, user, annotated sketch, sensory evaluations

Substantive knowledge

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Disciplinary knowledge

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Equipment

- Range of relevant example foods to taste and evaluate, suitable equipment and utensils such as: knives, chopping board, weighing scales, measuring jugs, bowls, baking trays, spoons - various sizes, parchment paper, cling film

Essential additional subject-specific information



- Have used some equipment and utensils and prepared and combined ingredients to make a product.

Guidance warnings

- Equipment requiring safe usage.
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7.

Exploring food and where it comes from

Pupils will learn

- that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world
- that a healthy diet is made up from a variety and balance of different food and drink, as depicted in the 'Eatwell Guide'
- that to be active and healthy, food and drink are needed to provide energy for the body

Lesson vocabulary

- Texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested, healthy/varied diet, planning, design criteria, purpose, user, annotated sketch, sensory evaluations

Substantive knowledge

- Know some ways to prepare ingredients safely and hygienically.

Disciplinary knowledge

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Equipment

- Range of relevant example foods to taste and evaluate, suitable equipment and utensils such as: knives, chopping board, weighing scales, measuring jugs, bowls,



baking trays, spoons - various sizes, parchment paper, cling film



Essential additional subject-specific information

- Have used some equipment and utensils and prepared and combined ingredients to make a product.

Guidance warnings

- Equipment requiring safe usage.
-

8.

Using evaluation to develop ideas further

Pupils will learn

- indicate the design features of their products that will appeal to intended users
- select tools and equipment suitable for the task
- select materials and components suitable for the task
- make design decisions that take account of the availability of resources
- order the main stages of making

Lesson vocabulary

- Texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested, healthy/varied diet, planning, design criteria, purpose, user, annotated sketch, sensory evaluations

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baking trays, spoons - various sizes, parchment paper, cling film



Essential additional subject-specific information

- Have used some equipment and utensils and prepared and combined ingredients to make a product.

Guidance warnings

- Equipment requiring safe usage.
-

**Pupils will learn**

- assemble, join and combine materials and components with some accuracy
- follow procedures for safety and hygiene
- use a wider range of materials and components than Key Stage 1, including food ingredients
- how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking

Lesson vocabulary

- Texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested, healthy/varied diet, planning, design criteria, purpose, user, annotated sketch, sensory evaluations

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Equipment

- Range of relevant example foods to taste and evaluate, suitable equipment and utensils such as: knives, chopping board, weighing scales, measuring jugs, bowls,

baking trays, spoons - various sizes, parchment paper, cling film



Essential additional subject-specific information

- Have used some equipment and utensils and prepared and combined ingredients to make a product.

Guidance warnings

- Equipment requiring safe usage.
-

**Pupils will learn**

- how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking
- that food ingredients can be fresh, pre-cooked and processed
- the correct technical vocabulary for the projects they are undertaking

Lesson vocabulary

- Texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested, healthy/varied diet, planning, design criteria, purpose, user, annotated sketch, sensory evaluations

Substantive knowledge

- Know some ways to prepare ingredients safely and hygienically.

Disciplinary knowledge

- Have some basic knowledge and understanding about healthy eating and the 'Eatwell Guide'.

Equipment

- Range of relevant example foods to taste and evaluate, suitable equipment and utensils such as: knives, chopping board, weighing scales, measuring jugs, bowls, baking trays, spoons - various sizes, parchment paper, cling film

Essential additional subject-specific information

- Have used some equipment and utensils and prepared and combined ingredients to make a product.

Guidance warnings

- Equipment requiring safe usage.
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Lesson number	Lesson question	About the lesson
1.	Understanding how a range of mechanisms create movement	<p>Pupils will learn</p> <ul style="list-style-type: none">• work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment• how mechanical systems such as levers and linkages or pneumatic systems create movement• whether products can be recycled or reused <p>Lesson vocabulary</p> <ul style="list-style-type: none">• Mechanism, lever, linkage, pivot, slot, bridge, guide, system, input, output, linear, rotary, oscillating, reciprocating, user, purpose, function, prototype, design criteria, innovative, appealing, design brief <p>Substantive knowledge</p> <ul style="list-style-type: none">• Explored and used mechanisms such as flaps, sliders and levers. <p>Disciplinary knowledge</p> <ul style="list-style-type: none">• Gained experience of basic cutting, joining and finishing techniques with paper and card. <p>Equipment</p> <ul style="list-style-type: none">• Card, paper, masking tape, paper fasteners, glue stick, scissors

Guidance warnings

- Equipment requiring safe usage.



2.

Developing understanding of different mechanisms and how to make them

Pupils will learn

- the correct technical vocabulary for the projects they are undertaking
- how mechanical systems such as levers and linkages or pneumatic systems create movement

Lesson vocabulary

- Mechanism, lever, linkage, pivot, slot, bridge, guide, system, input, output, linear, rotary, oscillating, reciprocating, user, purpose, function, prototype, design criteria, innovative, appealing, design brief

Substantive knowledge

- Explored and used mechanisms such as flaps, sliders and levers.

Disciplinary knowledge

- Gained experience of basic cutting, joining and finishing techniques with paper and card.

Equipment

- Card, paper, masking tape, paper fasteners, glue stick, scissors

Guidance warnings

- Equipment requiring safe usage.

3.

To design a product criteria, meeting the needs of the user

Pupils will learn

- generate realistic ideas, focusing on the needs of the user
- share and clarify ideas through discussion

Lesson vocabulary

- Mechanism, lever, linkage, pivot, slot, bridge, guide, system, input, output, linear, rotary, oscillating, reciprocating, user, purpose, function, prototype, design criteria, innovative, appealing, design brief

Substantive knowledge

- Explored and used mechanisms such as flaps, sliders and levers.

Disciplinary knowledge

- Gained experience of basic cutting, joining and finishing techniques with paper and card.

Equipment

- Card, paper, masking tape, paper fasteners, glue stick, scissors

Guidance warnings

- Equipment requiring safe usage.



4.

Using a range of techniques to create a prototype of developing ideas

Pupils will learn

- measure, mark out, cut and shape materials and components with some accuracy
- assemble, join and combine materials and components with some accuracy

Lesson vocabulary

- Mechanism, lever, linkage, pivot, slot, bridge, guide, system, input, output, linear, rotary, oscillating, reciprocating, user, purpose, function, prototype, design criteria, innovative, appealing, design brief

Substantive knowledge

- Explored and used mechanisms such as flaps, sliders and levers.

Disciplinary knowledge

- Gained experience of basic cutting, joining and finishing techniques with paper and card.

Equipment

- Card, paper, masking tape, paper fasteners, glue stick, scissors

Guidance warnings

- Equipment requiring safe usage.



5.

Developing design ideas further, using understanding of mechanisms

Pupils will learn

- indicate the design features of their products that will appeal to intended users
- explain how particular parts of their products work
- use annotated sketches to develop and communicate their ideas

Lesson vocabulary

- Mechanism, lever, linkage, pivot, slot, bridge, guide, system, input, output, linear, rotary, oscillating, reciprocating, user, purpose, function, prototype, design criteria, innovative, appealing, design brief

Substantive knowledge

- Explored and used mechanisms such as flaps, sliders and levers.

Disciplinary knowledge

- Gained experience of basic cutting, joining and finishing techniques with paper and card.

Equipment

- Card, paper, masking tape, paper fasteners, glue stick, scissors

Guidance warnings

- Equipment requiring safe usage.



6.

Planning the creation of your final idea

Pupils will learn

- order the main stages of making
- use annotated sketches and exploded diagrams to develop and communicate their ideas
- refer to their design criteria as they design and make

Lesson vocabulary

- Mechanism, lever, linkage, pivot, slot, bridge, guide, system, input, output, linear, rotary, oscillating, reciprocating, user, purpose, function, prototype, design criteria, innovative, appealing, design brief

Substantive knowledge

- Explored and used mechanisms such as flaps, sliders and levers.

Disciplinary knowledge

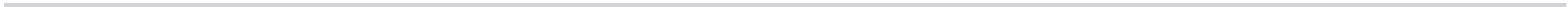
- Gained experience of basic cutting, joining and finishing techniques with paper and card.

Equipment

- Card, paper, masking tape, paper fasteners, glue stick, scissors

Guidance warnings

- Equipment requiring safe usage.



7.

Using a range of techniques to begin to make our final idea

Pupils will learn

- measure, mark out, cut and shape materials and components with some accuracy
- assemble, join and combine materials and components with some accuracy
- apply a range of finishing techniques, including those from art and design, with some accuracy

Lesson vocabulary

- Mechanism, lever, linkage, pivot, slot, bridge, guide, system, input, output, linear, rotary, oscillating, reciprocating, user, purpose, function, prototype, design criteria, innovative, appealing, design brief

Substantive knowledge

- Explored and used mechanisms such as flaps, sliders and levers.

Disciplinary knowledge

- Gained experience of basic cutting, joining and finishing techniques with paper and card.

Equipment

- Card, paper, masking tape, paper fasteners, glue stick, scissors

Guidance warnings

- Equipment requiring safe usage.



8.

Using a range of techniques to complete final idea

Pupils will learn

- measure, mark out, cut and shape materials and components with some accuracy
- assemble, join and combine materials and components with some accuracy
- apply a range of finishing techniques, including those from art and design, with some accuracy

Lesson vocabulary

- Mechanism, lever, linkage, pivot, slot, bridge, guide, system, input, output, linear, rotary, oscillating, reciprocating, user, purpose, function, prototype, design criteria, innovative, appealing, design brief

Substantive knowledge

- Explored and used mechanisms such as flaps, sliders and levers.

Disciplinary knowledge

- Gained experience of basic cutting, joining and finishing techniques with paper and card.

Equipment

- Card, paper, masking tape, paper fasteners, glue stick, scissors

Guidance warnings

- Equipment requiring safe usage.



9.

Using a range of techniques to complete final idea and testing against design criteria

Pupils will learn

- use a wider range of materials and components than Key Stage 1, including mechanical components
- use their design criteria to evaluate their completed products

Lesson vocabulary

- Mechanism, lever, linkage, pivot, slot, bridge, guide, system, input, output, linear, rotary, oscillating, reciprocating, user, purpose, function, prototype, design criteria, innovative, appealing, design brief

Substantive knowledge

- Explored and used mechanisms such as flaps, sliders and levers.

Disciplinary knowledge

- Gained experience of basic cutting, joining and finishing techniques with paper and card.

Equipment

- Card, paper, masking tape, paper fasteners, glue stick, scissors

Guidance warnings

- Equipment requiring safe usage.



Evaluation of final product and considering the views of others

Pupils will learn

- the correct technical vocabulary for the projects they are undertaking
- identify the strengths and areas for development in their ideas and products
- consider the views of others, including intended users, to improve their work

Lesson vocabulary

- Mechanism, lever, linkage, pivot, slot, bridge, guide, system, input, output, linear, rotary, oscillating, reciprocating, user, purpose, function, prototype, design criteria, innovative, appealing, design brief

Substantive knowledge

- Explored and used mechanisms such as flaps, sliders and levers.

Disciplinary knowledge

- Gained experience of basic cutting, joining and finishing techniques with paper and card.

Equipment

- Card, paper, masking tape, paper fasteners, glue stick, scissors

Guidance warnings

- Equipment requiring safe usage.





Lesson
number

Lesson question

About the lesson

1.

To investigate structures

Pupils will learn

- how well products have been designed
- why materials have been chosen
- what methods of construction have been used
- how well products work
- how well products meet user needs and wants

Lesson vocabulary

- Shell structure, frame structure, solid structure, combination structure, three-dimensional (3-D) shape, net, cube, cuboid, edge, face, length, width, breadth, capacity, marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating, font, lettering, text, graphics, decision, evaluating, design brief design criteria, innovative, prototype

Substantive knowledge

- Experience of using different joining, cutting and finishing techniques with paper and card.

Disciplinary knowledge

- A basic understanding of 2-D and 3-D shapes in mathematics and the physical properties and everyday

uses of materials in science.

Equipment

- Card, squared paper, sellotape, masking tape, pencil, corrugated card, ruler, scissors, fabric

Guidance warnings

- Equipment requiring safe usage.
-



2.

To construct nets to create 3D shapes

Pupils will learn

- how to make strong, stiff shell structures
- measure, mark out, cut and shape materials and components with some accuracy
- assemble, join and combine materials and components with some accuracy

Lesson vocabulary

- Shell structure, frame structure, solid structure, combination structure, three-dimensional (3-D) shape, net, cube, cuboid, edge, face, length, width, breadth, capacity, marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating, font, lettering, text, graphics, decision, evaluating, design brief design criteria, innovative, prototype

Substantive knowledge

- Experience of using different joining, cutting and finishing techniques with paper and card.

Disciplinary knowledge

- A basic understanding of 2-D and 3-D shapes in mathematics and the physical properties and everyday uses of materials in science.

Equipment

- Card, squared paper, sellotape, masking tape, pencil, corrugated card, ruler, scissors, fabric

Guidance warnings



- Equipment requiring safe usage.



3.

To evaluate existing structures

Pupils will learn

- PEB 9 - who designed and made the products
- where products were designed and made
- when products were designed and made

Lesson vocabulary

- Shell structure, frame structure, solid structure, combination structure, three-dimensional (3-D) shape, net, cube, cuboid, edge, face, length, width, breadth, capacity, marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating, font, lettering, text, graphics, decision, evaluating, design brief design criteria, innovative, prototype

Substantive knowledge

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Disciplinary knowledge

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Equipment

- Card, squared paper, sellotape, masking tape, pencil, corrugated card, ruler, scissors, fabric

Guidance warnings

- Equipment requiring safe usage.



4.

To develop a design brief and to sketch ideas for the product

Pupils will learn

- develop their own design criteria and use these to inform their idea
- generate realistic ideas, focusing on the needs of the user
- model their ideas using prototypes
- use annotated sketches to develop and communicate their ideas

Lesson vocabulary

- Shell structure, frame structure, solid structure, combination structure, three-dimensional (3-D) shape, net, cube, cuboid, edge, face, length, width, breadth, capacity, marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating, font, lettering, text, graphics, decision, evaluating, design brief design criteria, innovative, prototype

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Disciplinary knowledge

- A basic understanding of 2-D and 3-D shapes in mathematics and the physical properties and everyday uses of materials in science.

Equipment

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Guidance warnings

- Equipment requiring safe usage.
-



5.

To explore contexts and purposes of structures

Pupils will learn

- work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment
- describe the purpose of their products
- how to use learning from mathematics to help design and make products that work

Lesson vocabulary

- Shell structure, frame structure, solid structure, combination structure, three-dimensional (3-D) shape, net, cube, cuboid, edge, face, length, width, breadth, capacity, marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating, font, lettering, text, graphics, decision, evaluating, design brief design criteria, innovative, prototype

Substantive knowledge

- Experience of using different joining, cutting and finishing techniques with paper and card.

Disciplinary knowledge

- A basic understanding of 2-D and 3-D shapes in mathematics and the physical properties and everyday uses of materials in science.

Equipment

- Card, squared paper, sellotape, masking tape, pencil, corrugated card, ruler, scissors, fabric

Guidance warnings



- Equipment requiring safe usage.



6.

To design, make and evaluate structures

Pupils will learn

- refer to their design criteria as they design and make
- consider the views of others, including intended users, to improve their work

Lesson vocabulary

- Shell structure, frame structure, solid structure, combination structure, three-dimensional (3-D) shape, net, cube, cuboid, edge, face, length, width, breadth, capacity, marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating, font, lettering, text, graphics, decision, evaluating, design brief design criteria, innovative, prototype

Substantive knowledge

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Disciplinary knowledge

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Equipment

- Card, squared paper, sellotape, masking tape, pencil, corrugated card, ruler, scissors, fabric

Guidance warnings

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- order the main stages of making
- select tools and equipment suitable for the task
- select materials and components suitable for the task
- the correct technical vocabulary for the projects they are undertaking

Lesson vocabulary

- Shell structure, frame structure, solid structure, combination structure, three-dimensional (3-D) shape, net, cube, cuboid, edge, face, length, width, breadth, capacity, marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating, font, lettering, text, graphics, decision, evaluating, design brief design criteria, innovative, prototype

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Equipment

- Card, squared paper, sellotape, masking tape, pencil, corrugated card, ruler, scissors, fabric

Guidance warnings

- Equipment requiring safe usage.



8.

To measure, mark out, cut and shape materials

Pupils will learn

- use annotated sketches and cross-sectional drawings to develop and communicate their ideas
- measure, mark out, cut and shape materials and components with some accuracy
- assemble, join and combine materials and components with some accuracy

Lesson vocabulary

- Shell structure, frame structure, solid structure, combination structure, three-dimensional (3-D) shape, net, cube, cuboid, edge, face, length, width, breadth, capacity, marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating, font, lettering, text, graphics, decision, evaluating, design brief design criteria, innovative, prototype

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- Experience of using different joining, cutting and finishing techniques with paper and card.

Disciplinary knowledge

- A basic understanding of 2-D and 3-D shapes in mathematics and the physical properties and everyday uses of materials in science.

Equipment

- Card, squared paper, sellotape, masking tape, pencil, corrugated card, ruler, scissors, fabric

Guidance warnings



- Equipment requiring safe usage.



9.

To assemble, join and combine materials creating a finished product

Pupils will learn

- measure, mark out, cut and shape materials and components with some accuracy
- assemble, join and combine materials and components with some accuracy
- apply a range of finishing techniques, including those from art and design, with some accuracy

Lesson vocabulary

- Shell structure, frame structure, solid structure, combination structure, three-dimensional (3-D) shape, net, cube, cuboid, edge, face, length, width, breadth, capacity, marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating, font, lettering, text, graphics, decision, evaluating, design brief design criteria, innovative, prototype

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Equipment

- Card, squared paper, sellotape, masking tape, pencil, corrugated card, ruler, scissors, fabric

Guidance warnings



- Equipment requiring safe usage.



**Pupils will learn**

- PEA 5 - use their design criteria to evaluate their completed products
- PEA 8 - identify the strengths and areas for development in their ideas and products

Lesson vocabulary

- Shell structure, frame structure, solid structure, combination structure, three-dimensional (3-D) shape, net, cube, cuboid, edge, face, length, width, breadth, capacity, marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating, font, lettering, text, graphics, decision, evaluating, design brief design criteria, innovative, prototype

Substantive knowledge

- Experience of using different joining, cutting and finishing techniques with paper and card.

Disciplinary knowledge

- A basic understanding of 2-D and 3-D shapes in mathematics and the physical properties and everyday uses of materials in science.

Equipment

- Card, squared paper, sellotape, masking tape, pencil, corrugated card, ruler, scissors, fabric

Guidance warnings

- Equipment requiring safe usage.
-





Lesson number	Lesson question	About the lesson
1.	To learn about electrical systems	<p>Pupils will learn</p> <ul style="list-style-type: none">• that mechanical and electrical systems have an input, process and output• how well products achieve their purposes <p>Lesson vocabulary</p> <ul style="list-style-type: none">• Series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip, input device, output device, copper track, user, purpose, function, prototype, design criteria, innovative, appealing, design brief <p>Substantive knowledge</p> <ul style="list-style-type: none">• Cut and join a variety of construction materials, such as wood, card, plastic, reclaimed materials and glue. <p>Disciplinary knowledge</p> <ul style="list-style-type: none">• Constructed a simple series electrical circuit in science, using bulbs, switches and buzzers. <p>Equipment</p> <ul style="list-style-type: none">• Aluminium foil, paper fasteners, paper clips, card, paper clips, buzzers, bulbs, bulb holders, batteries, battery holders, scissors, copper tape, Computer/iPad <p>Guidance warnings</p>

- Equipment requiring safe usage.



2.

To learn how electrical products meet the needs of users

Pupils will learn

- how well products meet user needs and wants
- gather information about the needs and wants of particular individuals and groups
- how simple electrical circuits and components can be used to create functional products

Lesson vocabulary

- Series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip, input device, output device, copper track, user, purpose, function, prototype, design criteria, innovative, appealing, design brief

Substantive knowledge

- Cut and join a variety of construction materials, such as wood, card, plastic, reclaimed materials and glue.

Disciplinary knowledge

- Constructed a simple series electrical circuit in science, using bulbs, switches and buzzers.

Equipment

- Aluminium foil, paper fasteners, paper clips, card, paper clips, buzzers, bulbs, bulb holders, batteries, battery holders, scissors, copper tape, Computer/iPad

Guidance warnings

- Equipment requiring safe usage.



3.

To develop a design criteria

Pupils will learn

- work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment
- develop their own design criteria and use these to inform their idea

Lesson vocabulary

- Series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip, input device, output device, copper track, user, purpose, function, prototype, design criteria, innovative, appealing, design brief

Substantive knowledge

- Cut and join a variety of construction materials, such as wood, card, plastic, reclaimed materials and glue.

Disciplinary knowledge

- Constructed a simple series electrical circuit in science, using bulbs, switches and buzzers.

Equipment

- Aluminium foil, paper fasteners, paper clips, card, paper clips, buzzers, bulbs, bulb holders, batteries, battery holders, scissors, copper tape, Computer/iPad

Guidance warnings

- Equipment requiring safe usage.



- make design decisions that take account of the availability of resources
- use annotated sketches to develop and communicate their ideas

Lesson vocabulary

- Series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip, input device, output device, copper track, user, purpose, function, prototype, design criteria, innovative, appealing, design brief

Substantive knowledge

- Cut and join a variety of construction materials, such as wood, card, plastic, reclaimed materials and glue.

Disciplinary knowledge

- Constructed a simple series electrical circuit in science, using bulbs, switches and buzzers.

Equipment

- Aluminium foil, paper fasteners, paper clips, card, paper clips, buzzers, bulbs, bulb holders, batteries, battery holders, scissors, copper tape, Computer/iPad

Guidance warnings

- Equipment requiring safe usage.



5.

To know how to construct simple series circuits

Pupils will learn

- how to use learning from science to help design and make products that work
- measure, mark out, cut and shape materials and components with some accuracy
- identify the strengths and areas for development in their ideas and products

Lesson vocabulary

- Series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip, input device, output device, copper track, user, purpose, function, prototype, design criteria, innovative, appealing, design brief

Substantive knowledge

- Cut and join a variety of construction materials, such as wood, card, plastic, reclaimed materials and glue.

Disciplinary knowledge

- Constructed a simple series electrical circuit in science, using bulbs, switches and buzzers.

Equipment

- Aluminium foil, paper fasteners, paper clips, card, paper clips, buzzers, bulbs, bulb holders, batteries, battery holders, scissors, copper tape, Computer/iPad

Guidance warnings

- Equipment requiring safe usage.





6.

To generate ideas for electrical systems using different materials and components

Pupils will learn

- generate realistic ideas, focusing on the needs of the user
- order the main stages of making
- select materials and components suitable for the task

Lesson vocabulary

- Series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip, input device, output device, copper track, user, purpose, function, prototype, design criteria, innovative, appealing, design brief

Substantive knowledge

- Cut and join a variety of construction materials, such as wood, card, plastic, reclaimed materials and glue.

Disciplinary knowledge

- Constructed a simple series electrical circuit in science, using bulbs, switches and buzzers.

Equipment

- Aluminium foil, paper fasteners, paper clips, card, paper clips, buzzers, bulbs, bulb holders, batteries, battery holders, scissors, copper tape, Computer/iPad

Guidance warnings

- Equipment requiring safe usage.

7.

To design, make and test components for an electrical system.

Pupils will learn

- the correct technical vocabulary for the projects they are undertaking
- how well products meet user needs and wants

Lesson vocabulary

- Series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip, input device, output device, copper track, user, purpose, function, prototype, design criteria, innovative, appealing, design brief

Substantive knowledge

- Cut and join a variety of construction materials, such as wood, card, plastic, reclaimed materials and glue.

Disciplinary knowledge

- Constructed a simple series electrical circuit in science, using bulbs, switches and buzzers.

Equipment

- Aluminium foil, paper fasteners, paper clips, card, paper clips, buzzers, bulbs, bulb holders, batteries, battery holders, scissors, copper tape, Computer/iPad

Guidance warnings

- Equipment requiring safe usage.



8.

To use learning from science to help design and make working electrical products

Pupils will learn

- how to use learning from science to help design and make products that work
- measure, mark out, cut and shape materials and components with some accuracy

Lesson vocabulary

- Series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip, input device, output device, copper track, user, purpose, function, prototype, design criteria, innovative, appealing, design brief

Substantive knowledge

- Cut and join a variety of construction materials, such as wood, card, plastic, reclaimed materials and glue.

Disciplinary knowledge

- Constructed a simple series electrical circuit in science, using bulbs, switches and buzzers.

Equipment

- Aluminium foil, paper fasteners, paper clips, card, paper clips, buzzers, bulbs, bulb holders, batteries, battery holders, scissors, copper tape, Computer/iPad

Guidance warnings

- Equipment requiring safe usage.



9.

To select components to assemble electrical systems

Pupils will learn

- how to use learning from science to help design and make products that work
- measure, mark out, cut and shape materials and components with some accuracy

Lesson vocabulary

- Series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip, input device, output device, copper track, user, purpose, function, prototype, design criteria, innovative, appealing, design brief

Substantive knowledge

- Cut and join a variety of construction materials, such as wood, card, plastic, reclaimed materials and glue.

Disciplinary knowledge

- Constructed a simple series electrical circuit in science, using bulbs, switches and buzzers.

Equipment

- Aluminium foil, paper fasteners, paper clips, card, paper clips, buzzers, bulbs, bulb holders, batteries, battery holders, scissors, copper tape, Computer/iPad

Guidance warnings

- Equipment requiring safe usage.



To evaluate how well products meet user needs and wants

Pupils will learn

- explain how particular parts of their products work
- the correct technical vocabulary for the projects they are undertaking
- how well products meet user needs and wants

Lesson vocabulary

- Series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip, input device, output device, copper track, user, purpose, function, prototype, design criteria, innovative, appealing, design brief

Substantive knowledge

- Cut and join a variety of construction materials, such as wood, card, plastic, reclaimed materials and glue.

Disciplinary knowledge

- Constructed a simple series electrical circuit in science, using bulbs, switches and buzzers.

Equipment

- Aluminium foil, paper fasteners, paper clips, card, paper clips, buzzers, bulbs, bulb holders, batteries, battery holders, scissors, copper tape, Computer/iPad

Guidance warnings

- Equipment requiring safe usage.





Lesson number	Lesson question	About the lesson
1.	Introduction - Celebrating culture and seasonality	<p>Pupils will learn</p> <ul style="list-style-type: none">• that seasons may affect the food available• that food ingredients can be fresh, pre-cooked and processed• carry out research, using surveys, interviews, questionnaires and web-based resources• identify the needs, wants, preferences and values of particular individuals and group <p>Lesson vocabulary</p> <ul style="list-style-type: none">• Ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs, 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, sprinkle, crumble, design specification, innovative, research, evaluate, design brief <p>Substantive knowledge</p> <ul style="list-style-type: none">• Have knowledge and understanding about food hygiene, nutrition, healthy eating and a varied diet. <p>Disciplinary knowledge</p>



- Be able to use appropriate equipment and utensils, and apply a range of techniques for measuring out, preparing and combining ingredients

Equipment

- Weighing scales, measuring jugs, bowls, spoons - various sizes, baking trays

Guidance warnings

- Equipment requiring safe usage.
-

2.

Where does our food come from?

Pupils will learn

- that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world
- how food is processed into ingredients that can be eaten or used in cooking

Lesson vocabulary

- Ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs, 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, sprinkle, crumble, design specification, innovative, research, evaluate, design brief

Substantive knowledge

- Have knowledge and understanding about food hygiene, nutrition, healthy eating and a varied diet.

Disciplinary knowledge

- Be able to use appropriate equipment and utensils, and apply a range of techniques for measuring out, preparing and combining ingredients

Equipment

- Weighing scales, measuring jugs, bowls, spoons - various sizes, baking trays

Guidance warnings



- Equipment requiring safe usage.



3.

Understanding the needs of a healthy varied diet

Pupils will learn

- work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment
- that a recipe can be adapted by adding or substituting one or more ingredients
- the correct technical vocabulary for the projects they are undertaking

Lesson vocabulary

- Ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs, 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, sprinkle, crumble, design specification, innovative, research, evaluate, design brief

Substantive knowledge

- Have knowledge and understanding about food hygiene, nutrition, healthy eating and a varied diet.

Disciplinary knowledge

- Be able to use appropriate equipment and utensils, and apply a range of techniques for measuring out, preparing and combining ingredients

Equipment

- Weighing scales, measuring jugs, bowls, spoons - various sizes, baking trays



Guidance warnings

- Equipment requiring safe usage.
-



- how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source
- how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking

Lesson vocabulary

- Ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs, 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, sprinkle, crumble, design specification, innovative, research, evaluate, design brief

Substantive knowledge

- Have knowledge and understanding about food hygiene, nutrition, healthy eating and a varied diet.

Disciplinary knowledge

- Be able to use appropriate equipment and utensils, and apply a range of techniques for measuring out, preparing and combining ingredients

Equipment

- Weighing scales, measuring jugs, bowls, spoons - various sizes, baking trays

Guidance warnings

- Equipment requiring safe usage.



5.

Evaluating food products

Pupils will learn

- that different food and drink contain different substances - nutrients, water and fibre - that are needed for health
- critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make
- identify the strengths and areas for development in their ideas and products
- consider the views of others, including intended users, to improve their work

Lesson vocabulary

- Ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs, 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, sprinkle, crumble, design specification, innovative, research, evaluate, design brief

Substantive knowledge

- Have knowledge and understanding about food hygiene, nutrition, healthy eating and a varied diet.

Disciplinary knowledge

- Be able to use appropriate equipment and utensils, and apply a range of techniques for measuring out, preparing and combining ingredients



Equipment

- Weighing scales, measuring jugs, bowls, spoons - various sizes, baking trays

Guidance warnings

- Equipment requiring safe usage.
-



6.

Combining ingredients: making healthy pancakes

Pupils will learn

- develop a simple design specification to guide their thinking
- generate innovative ideas, drawing on research
- make design decisions, taking account of constraints such as time, resources and cost
- that recipes can be adapted to change the appearance, taste, texture and aroma

Lesson vocabulary

- Ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs, 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, sprinkle, crumble, design specification, innovative, research, evaluate, design brief

Substantive knowledge

- Have knowledge and understanding about food hygiene, nutrition, healthy eating and a varied diet.

Disciplinary knowledge

- Be able to use appropriate equipment and utensils, and apply a range of techniques for measuring out, preparing and combining ingredients

Equipment

- Weighing scales, measuring jugs, bowls, spoons - various sizes, baking trays



Guidance warnings

- Equipment requiring safe usage.
-



7.

The food industry

Pupils will learn

- produce appropriate lists of tools, equipment and materials that they need
- formulate step-by-step plans as a guide to making
- select tools and equipment suitable for the task
- how much products cost to make
- explain their choice of tools and equipment in relation to the skills and techniques they will be using

Lesson vocabulary

- Ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs, 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, sprinkle, crumble, design specification, innovative, research, evaluate, design brief

Substantive knowledge

- Have knowledge and understanding about food hygiene, nutrition, healthy eating and a varied diet.

Disciplinary knowledge

- Be able to use appropriate equipment and utensils, and apply a range of techniques for measuring out, preparing and combining ingredients

Equipment



- Weighing scales, measuring jugs, bowls, spoons - various sizes, baking trays

Guidance warnings

- Equipment requiring safe usage.
-



- accurately assemble, join and combine materials and components
- accurately apply a range of finishing techniques, including those from art and design
- use techniques that involve a number of steps
- follow procedures for safety and hygiene
- use a wider range of materials and components than Key Stage 1, including food ingredients and kitchen tools

Lesson vocabulary

- Ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs, 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, sprinkle, crumble, design specification, innovative, research, evaluate, design brief

Substantive knowledge

- Have knowledge and understanding about food hygiene, nutrition, healthy eating and a varied diet.

Disciplinary knowledge

- Be able to use appropriate equipment and utensils, and apply a range of techniques for measuring out, preparing and combining ingredients

Equipment

- Weighing scales, measuring jugs, bowls, spoons - various sizes, baking trays

Guidance warnings

- Equipment requiring safe usage.
-



9.

Design your own dish to reflect a culture or celebration

Pupils will learn

- how sustainable the materials in products are
- about chefs and manufacturers who have developed ground-breaking products

Lesson vocabulary

- Ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs, 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, sprinkle, crumble, design specification, innovative, research, evaluate, design brief

Substantive knowledge

- Have knowledge and understanding about food hygiene, nutrition, healthy eating and a varied diet.

Disciplinary knowledge

- Be able to use appropriate equipment and utensils, and apply a range of techniques for measuring out, preparing and combining ingredients

Equipment

- Weighing scales, measuring jugs, bowls, spoons - various sizes, baking trays

Guidance warnings

- Equipment requiring safe usage.



10.

Create your own dish to reflect your chosen culture or celebration

Pupils will learn

- why materials have been chosen
- how well products achieve their purposes
- how well products meet user needs and wants

Lesson vocabulary

- Ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs, 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, sprinkle, crumble, design specification, innovative, research, evaluate, design brief

Substantive knowledge

- Have knowledge and understanding about food hygiene, nutrition, healthy eating and a varied diet.

Disciplinary knowledge

- Be able to use appropriate equipment and utensils, and apply a range of techniques for measuring out, preparing and combining ingredients

Equipment

- Weighing scales, measuring jugs, bowls, spoons - various sizes, baking trays

Guidance warnings

- Equipment requiring safe usage.





Lesson
number

Lesson question

About the lesson

1.

Introduction lesson: understanding electrical systems

Pupils will learn

- that mechanical and electrical systems have an input, process and output
- the correct technical vocabulary for the projects they are undertaking
- accurately assemble, join and combine materials and components
- use techniques that involve a number of steps

Lesson vocabulary

- Reed switch, toggle switch, push-to-make switch, push-to-break switch, light dependent resistor (LDR), tilt switch, light emitting diode (LED) USB cable, wire, insulator, conductor, crocodile clip, control, microprocessor, program, system, input device, output device, function, innovative, design specification, design brief, user, purpose, exploded, isometric, prototype

Substantive knowledge

- Some experience of writing and modifying a program e.g. Scratch

Disciplinary knowledge

- Understanding of the essential characteristics of a series circuit and experience of creating a battery-powered,

functional, electrical product.

Equipment

- Computer / iPad with internet access, construction materials i.e. card, scissors, tape, paper.

Guidance warnings

- Equipment requiring safe usage.
-



2.

Exploring electrical and mechanical systems: the need for control in design and technology

Pupils will learn

- the correct technical vocabulary for the projects they are undertaking
- accurately assemble, join and combine materials and components
- use techniques that involve a number of steps
- use a wider range of materials and components than Key Stage 1, including electrical components

Lesson vocabulary

- Reed switch, toggle switch, push-to-make switch, push-to-break switch, light dependent resistor (LDR), tilt switch, light emitting diode (LED) USB cable, wire, insulator, conductor, crocodile clip, control, microprocessor, program, system, input device, output device, function, innovative, design specification, design brief, user, purpose, exploded, isometric, prototype

Substantive knowledge

- Some experience of writing and modifying a program e.g. Scratch

Disciplinary knowledge

- Understanding of the essential characteristics of a series circuit and experience of creating a battery-powered, functional, electrical product.

Equipment

- Computer / iPad with internet access, construction materials i.e. card, scissors, tape, paper.



Guidance warnings

- Equipment requiring safe usage.
-



3.

Exploring how to control simple circuits to create more functional products

Pupils will learn

- work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment
- how more complex electrical circuits and components can be used to create functional products
- how to program a computer to monitor changes in the environment and control their products
- how to use learning from science to help design and make products that work

Lesson vocabulary

- Reed switch, toggle switch, push-to-make switch, push-to-break switch, light dependent resistor (LDR), tilt switch, light emitting diode (LED) USB cable, wire, insulator, conductor, crocodile clip, control, microprocessor, program, system, input device, output device, function, innovative, design specification, design brief, user, purpose, exploded, isometric, prototype

Substantive knowledge

- Some experience of writing and modifying a program e.g. Scratch

Disciplinary knowledge

- Understanding of the essential characteristics of a series circuit and experience of creating a battery-powered, functional, electrical product.

Equipment



- Computer / iPad with internet access, construction materials i.e. card, scissors, tape, paper.

Guidance warnings

- Equipment requiring safe usage.
-



4.

Responding to a design brief and exploring ideas

Pupils will learn

- develop a simple design specification to guide their thinking
- use annotated sketches to develop and communicate their ideas

Lesson vocabulary

- Reed switch, toggle switch, push-to-make switch, push-to-break switch, light dependent resistor (LDR), tilt switch, light emitting diode (LED) USB cable, wire, insulator, conductor, crocodile clip, control, microprocessor, program, system, input device, output device, function, innovative, design specification, design brief, user, purpose, exploded, isometric, prototype

Substantive knowledge

- Some experience of writing and modifying a program e.g. Scratch

Disciplinary knowledge

- Understanding of the essential characteristics of a series circuit and experience of creating a battery-powered, functional, electrical product.

Equipment

- Computer / iPad with internet access, construction materials i.e. card, scissors, tape, paper.

Guidance warnings

- Equipment requiring safe usage.



5.

Developing an idea

Pupils will learn

- develop a simple design specification to guide their thinking
- use exploded diagrams to develop and communicate their ideas

Lesson vocabulary

- Reed switch, toggle switch, push-to-make switch, push-to-break switch, light dependent resistor (LDR), tilt switch, light emitting diode (LED) USB cable, wire, insulator, conductor, crocodile clip, control, microprocessor, program, system, input device, output device, function, innovative, design specification, design brief, user, purpose, exploded, isometric, prototype

Substantive knowledge

- Some experience of writing and modifying a program e.g. Scratch

Disciplinary knowledge

- Understanding of the essential characteristics of a series circuit and experience of creating a battery-powered, functional, electrical product.

Equipment

- Computer / iPad with internet access, construction materials i.e. card, scissors, tape, paper.

Guidance warnings

- Equipment requiring safe usage.



6.

Exploring the use of new and emerging technology used in products

Pupils will learn

- how innovative products are
- how well products work
- new and emerging technology, including wearables

Lesson vocabulary

- Reed switch, toggle switch, push-to-make switch, push-to-break switch, light dependent resistor (LDR), tilt switch, light emitting diode (LED) USB cable, wire, insulator, conductor, crocodile clip, control, microprocessor, program, system, input device, output device, function, innovative, design specification, design brief, user, purpose, exploded, isometric, prototype

Substantive knowledge

- Some experience of writing and modifying a program e.g. Scratch

Disciplinary knowledge

- Understanding of the essential characteristics of a series circuit and experience of creating a battery-powered, functional, electrical product.

Equipment

- Computer / iPad with internet access, construction materials i.e. card, scissors, tape, paper.

Guidance warnings

- Equipment requiring safe usage.



7.

Planning to make an end product

Pupils will learn

- formulate step-by-step plans as a guide to making
- select tools and equipment suitable for the task

Lesson vocabulary

- Reed switch, toggle switch, push-to-make switch, push-to-break switch, light dependent resistor (LDR), tilt switch, light emitting diode (LED) USB cable, wire, insulator, conductor, crocodile clip, control, microprocessor, program, system, input device, output device, function, innovative, design specification, design brief, user, purpose, exploded, isometric, prototype

Substantive knowledge

- Some experience of writing and modifying a program e.g. Scratch

Disciplinary knowledge

- Understanding of the essential characteristics of a series circuit and experience of creating a battery-powered, functional, electrical product.

Equipment

- Computer / iPad with internet access, construction materials i.e. card, scissors, tape, paper.

Guidance warnings

- Equipment requiring safe usage.



8.

Making a final prototype

Pupils will learn

- the correct technical vocabulary for the projects they are undertaking
- accurately assemble, join and combine materials and components

Lesson vocabulary

- Reed switch, toggle switch, push-to-make switch, push-to-break switch, light dependent resistor (LDR), tilt switch, light emitting diode (LED) USB cable, wire, insulator, conductor, crocodile clip, control, microprocessor, program, system, input device, output device, function, innovative, design specification, design brief, user, purpose, exploded, isometric, prototype

Substantive knowledge

- Some experience of writing and modifying a program e.g. Scratch

Disciplinary knowledge

- Understanding of the essential characteristics of a series circuit and experience of creating a battery-powered, functional, electrical product.

Equipment

- Computer / iPad with internet access, construction materials i.e. card, scissors, tape, paper.

Guidance warnings

- Equipment requiring safe usage.



9.

Making a final prototype: electrical system

Pupils will learn

- identify the strengths and areas for development in their ideas and products
- consider the views of others, including intended users, to improve their work

Lesson vocabulary

- Reed switch, toggle switch, push-to-make switch, push-to-break switch, light dependent resistor (LDR), tilt switch, light emitting diode (LED) USB cable, wire, insulator, conductor, crocodile clip, control, microprocessor, program, system, input device, output device, function, innovative, design specification, design brief, user, purpose, exploded, isometric, prototype

Substantive knowledge

- Some experience of writing and modifying a program e.g. Scratch

Disciplinary knowledge

- Understanding of the essential characteristics of a series circuit and experience of creating a battery-powered, functional, electrical product.

Equipment

- Computer / iPad with internet access, construction materials i.e. card, scissors, tape, paper.

Guidance warnings

- Equipment requiring safe usage.



Pupils will learn

- explain how particular parts of their products work
- critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make
- evaluate their ideas and products against their original design specification

Lesson vocabulary

- Reed switch, toggle switch, push-to-make switch, push-to-break switch, light dependent resistor (LDR), tilt switch, light emitting diode (LED) USB cable, wire, insulator, conductor, crocodile clip, control, microprocessor, program, system, input device, output device, function, innovative, design specification, design brief, user, purpose, exploded, isometric, prototype

Substantive knowledge

- Some experience of writing and modifying a program e.g. Scratch

Disciplinary knowledge

- Understanding of the essential characteristics of a series circuit and experience of creating a battery-powered, functional, electrical product.

Equipment

- Computer / iPad with internet access, construction materials i.e. card, scissors, tape, paper.

Guidance warnings

- Equipment requiring safe usage.





Lesson
number

Lesson question

About the lesson

1.

How do we analyse existing products' designs?

Pupils will learn

- how innovative products are
- what impact products have beyond their intended purpose
- what methods of construction have been used
- how well products meet user needs and wants

Lesson vocabulary

- Computer-aided design, (CAD), Computer-aided manufacture (CAM) augmented reality, face, plane, extrude, view cube, dimension, radius, align, empathy, scale, modify, repeat, copy, flip design brief, design criteria, design decisions, innovative, prototype

Disciplinary knowledge

- Basic computer ability / experience.

Equipment

- Computer / iPad with internet access, mouse, ruler, paper

Guidance warnings

- Equipment requiring safe usage.

2.

Why do we need to research before designing?

Pupils will learn

- carry out research, using surveys and web-based resources

Lesson vocabulary

- Computer-aided design, (CAD), Computer-aided manufacture (CAM) augmented reality, face, plane, extrude, view cube, dimension, radius, align, empathy, scale, modify, repeat, copy, flip design brief, design criteria, design decisions, innovative, prototype

Disciplinary knowledge

- Basic computer ability / experience.

Equipment

- Computer / iPad with internet access, mouse, ruler, paper

Guidance warnings

- Equipment requiring safe usage.
-



3.

How can we identify what our users want?

Pupils will learn

- identify the needs, wants, preferences and values of particular individuals and groups
- develop a simple design specification to guide their thinking

Lesson vocabulary

- Computer-aided design, (CAD), Computer-aided manufacture (CAM) augmented reality, face, plane, extrude, view cube, dimension, radius, align, empathy, scale, modify, repeat, copy, flip design brief, design criteria, design decisions, innovative, prototype

Disciplinary knowledge

- Basic computer ability / experience.

Equipment

- Computer / iPad with internet access, mouse, ruler, paper

Guidance warnings

- Equipment requiring safe usage.



4.

Who are architects and what do they do?

Pupils will learn

- about designers and engineers who have developed ground-breaking products

Lesson vocabulary

- Computer-aided design, (CAD), Computer-aided manufacture (CAM) augmented reality, face, plane, extrude, view cube, dimension, radius, align, empathy, scale, modify, repeat, copy, flip design brief, design criteria, design decisions, innovative, prototype

Disciplinary knowledge

- Basic computer ability / experience.

Equipment

- Computer / iPad with internet access, mouse, ruler, paper

Guidance warnings

- Equipment requiring safe usage.
-



5.

What is a specification and why do we need to write one?

Pupils will learn

- work confidently within a range of contexts, such as the home, school, leisure, culture, industry and the wider environment
- describe the purpose of their products
- indicate the design features of their products that will appeal to intended users
- explain how particular parts of their products work

Lesson vocabulary

- Computer-aided design, (CAD), Computer-aided manufacture (CAM) augmented reality, face, plane, extrude, view cube, dimension, radius, align, empathy, scale, modify, repeat, copy, flip design brief, design criteria, design decisions, innovative, prototype

Disciplinary knowledge

- Basic computer ability / experience.

Equipment

- Computer / iPad with internet access, mouse, ruler, paper

Guidance warnings

- Equipment requiring safe usage.



6.

What makes an effective range of initial design ideas? Pupils will learn



- generate innovative ideas, drawing on research
- make design decisions, taking account of constraints such as time, resources and cost
- model their ideas using prototypes
- use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas

Lesson vocabulary

- Computer-aided design, (CAD), Computer-aided manufacture (CAM) augmented reality, face, plane, extrude, view cube, dimension, radius, align, empathy, scale, modify, repeat, copy, flip design brief, design criteria, design decisions, innovative, prototype

Disciplinary knowledge

- Basic computer ability / experience.

Equipment

- Computer / iPad with internet access, mouse, ruler, paper

Guidance warnings

- Equipment requiring safe usage.
-

7.

What are the benefits of using computer aided design?

Pupils will learn

- select materials and components suitable for the task
- explain their choice of materials and components according to functional properties and aesthetic qualities
- use computer-aided design to develop and communicate their ideas

Lesson vocabulary

- Computer-aided design, (CAD), Computer-aided manufacture (CAM) augmented reality, face, plane, extrude, view cube, dimension, radius, align, empathy, scale, modify, repeat, copy, flip design brief, design criteria, design decisions, innovative, prototype

Disciplinary knowledge

- Basic computer ability / experience.

Equipment

- Computer / iPad with internet access, mouse, ruler, paper

Guidance warnings

- Equipment requiring safe usage.



8.

How can you develop designs using computer aided design?

Pupils will learn

- accurately measure, mark out, cut and shape materials and components
- accurately assemble, join and combine materials and components
- use computer-aided design to develop and communicate their ideas

Lesson vocabulary

- Computer-aided design, (CAD), Computer-aided manufacture (CAM) augmented reality, face, plane, extrude, view cube, dimension, radius, align, empathy, scale, modify, repeat, copy, flip design brief, design criteria, design decisions, innovative, prototype

Disciplinary knowledge

- Basic computer ability / experience.

Equipment

- Computer / iPad with internet access, mouse, ruler, paper

Guidance warnings

- Equipment requiring safe usage.



9.

How can you present and share your final designs?

Pupils will learn

- share and clarify ideas through discussion
- carry out research, using surveys and web-based resources

Lesson vocabulary

- Computer-aided design, (CAD), Computer-aided manufacture (CAM) augmented reality, face, plane, extrude, view cube, dimension, radius, align, empathy, scale, modify, repeat, copy, flip design brief, design criteria, design decisions, innovative, prototype

Disciplinary knowledge

- Basic computer ability / experience.

Equipment

- Computer / iPad with internet access, mouse, ruler, paper

Guidance warnings

- Equipment requiring safe usage.



10.

Why is it important to evaluate your final designs?

Pupils will learn

- the correct technical vocabulary for the projects they are undertaking
- critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make
- consider the views of others, including intended users, to improve their work

Lesson vocabulary

- Computer-aided design, (CAD), Computer-aided manufacture (CAM) augmented reality, face, plane, extrude, view cube, dimension, radius, align, empathy, scale, modify, repeat, copy, flip design brief, design criteria, design decisions, innovative, prototype

Disciplinary knowledge

- Basic computer ability / experience.

Equipment

- Computer / iPad with internet access, mouse, ruler, paper

Guidance warnings

- Equipment requiring safe usage.





Lesson number	Lesson question	About the lesson
1.	What are the properties of different fabrics?	<p>Pupils will learn</p> <ul style="list-style-type: none">• that materials have both functional properties and aesthetic qualities• the correct technical vocabulary for the projects they are undertaking <p>Lesson vocabulary</p> <ul style="list-style-type: none">• Seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces, design criteria, annotate, design decisions, functionality, innovation, authentic, user, purpose, evaluate, mock-up, prototype, aesthetics, function, constraints <p>Substantive knowledge</p> <ul style="list-style-type: none">• Experience of basic stitching, joining textiles and finishing techniques. <p>Disciplinary knowledge</p> <ul style="list-style-type: none">• Experience of making and using simple pattern pieces. <p>Equipment</p> <ul style="list-style-type: none">• Existing textile products for investigation and deconstruction, selection of fabrics, pins, needles, thread, measuring tape <p>Guidance warnings</p>

- Equipment requiring safe usage.



2.

What are modern and smart textile materials?

Pupils will learn

- what impact products have beyond their intended purpose, the negative impact of the textiles industry

Lesson vocabulary

- Seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces, design criteria, annotate, design decisions, functionality, innovation, authentic, user, purpose, evaluate, mock-up, prototype, aesthetics, function, constraints

Substantive knowledge

- Experience of basic stitching, joining textiles and finishing techniques.

Disciplinary knowledge

- Experience of making and using simple pattern pieces.

Equipment

- Existing textile products for investigation and deconstruction, selection of fabrics, pins, needles, thread, measuring tape

Guidance warnings

- Equipment requiring safe usage.
-

3.

How can textiles become more sustainable?

Pupils will learn

- work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment
- carry out research, using interviews and questionnaires
- consider the views of others, including intended users, to improve their work

Lesson vocabulary

- Seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces, design criteria, annotate, design decisions, functionality, innovation, authentic, user, purpose, evaluate, mock-up, prototype, aesthetics, function, constraints

Substantive knowledge

- Experience of basic stitching, joining textiles and finishing techniques.

Disciplinary knowledge

- Experience of making and using simple pattern pieces.

Equipment

- Existing textile products for investigation and deconstruction, selection of fabrics, pins, needles, thread, measuring tape

Guidance warnings

- Equipment requiring safe usage.



What are the different types of stitches used in textiles?

Pupils will learn

- how well products have been made
- why materials have been chosen
- that a 3D textiles product can be made from a combination of fabric shapes

Lesson vocabulary

- Seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces, design criteria, annotate, design decisions, functionality, innovation, authentic, user, purpose, evaluate, mock-up, prototype, aesthetics, function, constraints

Substantive knowledge

- Experience of basic stitching, joining textiles and finishing techniques.

Disciplinary knowledge

- Experience of making and using simple pattern pieces.

Equipment

- Existing textile products for investigation and deconstruction, selection of fabrics, pins, needles, thread, measuring tape

Guidance warnings

- Equipment requiring safe usage.



5.

What makes an effective range of initial design ideas?

Pupils will learn

- use annotated sketches to develop and communicate their ideas
- describe the purpose of their products
- indicate the design features of their products that will appeal to intended users

Lesson vocabulary

- Seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces, design criteria, annotate, design decisions, functionality, innovation, authentic, user, purpose, evaluate, mock-up, prototype, aesthetics, function, constraints

Substantive knowledge

- Experience of basic stitching, joining textiles and finishing techniques.

Disciplinary knowledge

- Experience of making and using simple pattern pieces.

Equipment

- Existing textile products for investigation and deconstruction, selection of fabrics, pins, needles, thread, measuring tape

Guidance warnings

- Equipment requiring safe usage.



6.

How do we develop our design ideas?

Pupils will learn

- use annotated sketches to develop and communicate their ideas
- that materials have both functional properties and aesthetic qualities
- the correct technical vocabulary for the projects they are undertaking
- critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make

Lesson vocabulary

- Seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces, design criteria, annotate, design decisions, functionality, innovation, authentic, user, purpose, evaluate, mock-up, prototype, aesthetics, function, constraints

Substantive knowledge

- Experience of basic stitching, joining textiles and finishing techniques.

Disciplinary knowledge

- Experience of making and using simple pattern pieces.

Equipment

- Existing textile products for investigation and deconstruction, selection of fabrics, pins, needles, thread, measuring tape

Guidance warnings



- Equipment requiring safe usage.



7.

How to use the tools and equipment to mark our phone holder accurately

Pupils will learn

- select tools and equipment suitable for the task
- select materials and components suitable for the task
- produce appropriate lists of tools, equipment and materials that they need
- formulate step-by-step plans as a guide to making

Lesson vocabulary

- Seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces, design criteria, annotate, design decisions, functionality, innovation, authentic, user, purpose, evaluate, mock-up, prototype, aesthetics, function, constraints

Substantive knowledge

- Experience of basic stitching, joining textiles and finishing techniques.

Disciplinary knowledge

- Experience of making and using simple pattern pieces.

Equipment

- Existing textile products for investigation and deconstruction, selection of fabrics, pins, needles, thread, measuring tape

Guidance warnings

- Equipment requiring safe usage.



8.

What stitch will be most suitable to join our pieces of fabric together?

Pupils will learn

- accurately apply a range of finishing techniques, including those from art and design
- use techniques that involve a number of steps
- use a wider range of materials and components than Key Stage 1, including, textiles, and components

Lesson vocabulary

- Seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces, design criteria, annotate, design decisions, functionality, innovation, authentic, user, purpose, evaluate, mock-up, prototype, aesthetics, function, constraints

Substantive knowledge

- Experience of basic stitching, joining textiles and finishing techniques.

Disciplinary knowledge

- Experience of making and using simple pattern pieces.

Equipment

- Existing textile products for investigation and deconstruction, selection of fabrics, pins, needles, thread, measuring tape

Guidance warnings

- Equipment requiring safe usage.



9.

How can we correctly apply a finish to our phone holder?

Pupils will learn

- critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make
- identify the strengths and areas for development in their ideas and products

Lesson vocabulary

- Seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces, design criteria, annotate, design decisions, functionality, innovation, authentic, user, purpose, evaluate, mock-up, prototype, aesthetics, function, constraints

Substantive knowledge

- Experience of basic stitching, joining textiles and finishing techniques.

Disciplinary knowledge

- Experience of making and using simple pattern pieces.

Equipment

- Existing textile products for investigation and deconstruction, selection of fabrics, pins, needles, thread, measuring tape

Guidance warnings

- Equipment requiring safe usage.



10.

Why is it important to evaluate your finished product?

Pupils will learn

- evaluate their ideas and products against their original design specification
- what impact products have beyond their intended purpose

Lesson vocabulary

- Seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces, design criteria, annotate, design decisions, functionality, innovation, authentic, user, purpose, evaluate, mock-up, prototype, aesthetics, function, constraints

Substantive knowledge

- Experience of basic stitching, joining textiles and finishing techniques.

Disciplinary knowledge

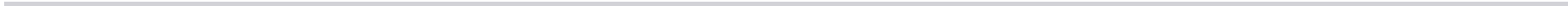
- Experience of making and using simple pattern pieces.

Equipment

- Existing textile products for investigation and deconstruction, selection of fabrics, pins, needles, thread, measuring tape

Guidance warnings

- Equipment requiring safe usage.



4. Learn More



Contents

Section number

Section title

1.

Coherence and flexibility

2.

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Curriculum design constraints



1. Coherence and flexibility

The Design & Technology (D&T) curriculum is designed to offer flexibility in terms of the order in which units are taught whilst offering coherence within units and across year groups. There are two units for each Year Group each consisting of 10 lessons. Lessons are broken down into smaller parts to aid understanding, given the asynchronous nature of the lessons. For the units to be coherent, the lessons within them must be taught in order. However, the curriculum is flexible in terms of the order in which you teach units within a Year Group. Year 5 celebrations unit is advised at the start of the year due to a possible greater number of events to tie into at that time of year.

In some units, the practical element/nature of the subject will require schools to provide/loan materials or components that cannot realistically be expected to be found in the home context. Whilst units are organised into Year Groups, lessons may be appropriate for two years above or below the intended age range. For example, a teacher of a Year 3 class may deem Year 2 or indeed a Year 1 class appropriate depending on prior experiences and knowledge of D&T.

2. Knowledge organisation

The curriculum organises content into strands that encapsulate the disciplines that are core to D&T and expands upon those that are highlighted in the national curriculum's programme of study.

The key themes are:

Designing

- Understanding contexts, users and purposes
- Generating, developing, modelling and communicating ideas

Making

- Planning
- Practical skills and techniques

Evaluating

- Own ideas and products
- Existing products
- Key events and individuals



Technical knowledge, including making products work

Cooking and nutrition

- Where food comes from
- Food preparation, cooking and nutrition

Technology in society

- Sustainability
- Impact of technologies, including emerging technologies

3. Knowledge selection

Decisions about knowledge selection have been guided by:

1. relevant knowledge which underpins the subject
2. relevance to pupils' experiences and understanding of the world.
3. the national curriculum, and in addition the D&T Progression Framework
4. high quality resources already available to us
5. consultation with D&T specialists and examples of best practice
6. important issues relating to impacts, both good and bad of design, manufacture and products on the world and individuals.

Content has been selected for this curriculum that develops coordination, spatial awareness, creative thinking, problem-solving and incorporates and utilises skills and knowledge from other subject areas. Whilst other subject areas are intrinsically



linked, i.e. mathematics, science etc. there is a conscious recognition and understanding that this cannot be a barrier to learning as every pupil is likely to have different experiences and starting points. There is a purposely strong emphasis on encouraging reflection and iteration, with a pupil-led approach. Rather than a 'designing-by-numbers' approach, pupils will be encouraged to creatively explore briefs and opportunities.

The suggested curriculum sequence builds through the key stages so that as pupils move forward in their education, they are equipped with the prior knowledge that they need to succeed in the next phase.

4. Subject structure overview

Three kinds of activity are included:

- Investigative and Evaluative Activities (IEA's); with a focus on exploring and research. This will also incorporate opportunities to discuss 'Technology in Society', developing knowledge and skills.
- Focussed Tasks (FT's); with a focus on skill development.
- Design, Make and Evaluate Activities (DMEA's); with a focus on developing knowledge and skills through product development, following an iterative cycle of reflection and development. The briefs / contexts for this are purposely opened out as the years progress. The initial briefs are quite constrained in terms of proposed outcomes, whereas later in Key Stage 2, there is more ownership for the pupil to explore different opportunities with the context.

Making and testing is underplayed in these units compared to the role it usually has in a school-based D&T curriculum, because of the constraints imposed by asynchronous learning. Where there is a focus on making, it is on developing prototypes rather than 'finished' products.

The units have a varied approach to an iterative design cycle with different 'starting points' and order of experience. For example, some units may begin with designing before evaluating and assessing relevant research required to aid further development. Other units may begin with collating research and analysing users before progressing to a design task. This approach is to help develop pupils' decision-making processes and future confidence in navigating an iterative cycle independently.

5. Unit Specifics

Unit title	Prior knowledge required:	Key vocabulary	Equipment required
Year 3 Cooking and nutrition: Healthy and varied diets	<p>Know some ways to prepare ingredients safely and hygienically.</p> <p>Have some basic knowledge and understanding about healthy eating and the 'Eatwell Guide'.</p> <p>Have used some equipment and utensils and prepared and combined ingredients to make a product.</p>	<p>Texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested, healthy/varied diet, planning, design criteria, purpose, user, annotated sketch, sensory evaluations</p>	<p>Range of relevant example foods to taste and evaluate, suitable equipment and utensils such as: knives, chopping board, weighing scales, measuring jugs, bowls, baking trays, spoons – various sizes, parchment paper, cling film</p>
Year 3 Mechanisms: Levers and linkages	<p>Explored and used mechanisms such as flaps, sliders and levers.</p> <p>Gained experience of basic cutting, joining and finishing techniques with paper and card.</p>	<p>Mechanism, lever, linkage, pivot, slot, bridge, guide, system, input, output, linear, rotary, oscillating, reciprocating, user, purpose, function, prototype, design criteria, innovative, appealing, design brief</p>	<p>Card, paper, masking tape, paper fasteners, glue stick, scissors</p>
Year 4 Keep it Safe: Shell, solid and combination structures	<p>Experience of using different joining, cutting and finishing techniques with paper and card.</p> <p>A basic understanding of 2-D and 3-D shapes in mathematics</p>	<p>Shell structure, frame structure, solid structure, combination structure, three-dimensional (3-D) shape, net, cube, cuboid, edge, face, length, width, breadth, capacity, marking out, scoring,</p>	<p>Card, squared paper, sellotape, masking tape, pencil, corrugated card, ruler, scissors, fabric</p>





and the physical properties
and everyday uses of materials
in science.

shaping, tabs, adhesives,
joining, assemble, accuracy,
material, stiff, strong, reduce,
reuse, recycle, corrugating,
ribbing, laminating, font,
lettering, text, graphics,
decision, evaluating, design
brief design criteria, innovative,
prototype

Year 4 Electronics: Simple
circuits and switches

Constructed a simple series
electrical circuit in science,
using bulbs, switches and
buzzers.

Cut and join a variety of
construction materials, such as
wood, card, plastic, reclaimed
materials and glue.

Series circuit, fault, connection, Aluminium foil, paper
toggle switch, push-to-make fasteners, paper clips, card,
switch, push-to-break switch, paper clips, buzzers, bulbs,
battery, battery holder, bulb, bulb holders, batteries, battery
bulb holder, wire, insulator, holders, scissors, copper tape,
conductor, crocodile clip, input Computer/iPad
device, output device, copper
track, user, purpose, function,
prototype, design criteria,
innovative, appealing, design
brief

Year 5 Cooking and nutrition:
Celebrating culture and
seasonality

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

Ingredients, yeast, dough, bran, Weighing scales, measuring
flour, wholemeal, unleavened, jugs, bowls, spoons – various
baking soda, spice, herbs, fat, sizes, baking trays
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, sprinkle, crumble, design specification, innovative, research, evaluate, design brief	
Year 5 Control	Some experience of writing and modifying a program e.g. Scratch Understanding of the essential characteristics of a series circuit and experience of creating a battery-powered, functional, electrical product.	Reed switch, toggle switch, push-to-make switch, push-to-break switch, light dependent resistor (LDR), tilt switch, light emitting diode (LED) USB cable, wire, insulator, conductor, crocodile clip, control, microprocessor, program, system, input device, output device, function, innovative, design specification, design brief, user, purpose, exploded, isometric, prototype	Computer / iPad with internet access, construction materials i.e. card, scissors, tape, paper.
Year 6 3D computer-aided design	Basic computer ability / experience.	Computer-aided design, (CAD), Computer-aided manufacture (CAM) augmented reality, face, plane, extrude, view cube, dimension, radius, align, empathy, scale, modify, repeat, copy, flip design brief, design criteria, design decisions, innovative, prototype	Computer / iPad with internet access, mouse, ruler, paper
Year 6 Textiles: Combining	Experience of basic stitching,	Seam, seam allowance,	Existing textile products for

different fabric shapes	joining textiles and finishing techniques.	wadding, reinforce, right side, wrong side, hem, template, pattern pieces, design criteria, annotate, design decisions, functionality, innovation, authentic, user, purpose, evaluate, mock-up, prototype, aesthetics, function, constraints	investigation and deconstruction, selection of fabrics, pins, needles, thread, measuring tape
	Experience of making and using simple pattern pieces.		



6. Inclusive and ambitious

We want Oak to be able to support all children. The D&T units are pitched so that pupils with different starting points can access them. Lessons within a unit are sequenced so that each one builds on prior learning. The activities are scaffolded so all children can succeed, and they provide scope for all to be challenged.

7. Pupil engagement

The D&T lessons are structured to engage pupils in thinking during their lessons - both to engage with the subject matter and to strengthen their memory of what is being learnt.

The nature of D&T is that alongside reading and writing activities in the lessons, pupils will need to be sketching and drawing ideas. In addition, many of our lessons require practical application of the concepts and skills being learned. In many cases this can be done using materials commonly found in the home and the lessons provide guidance on how to use such materials safely alongside adult supervision where necessary and reinforce the learning from the lesson.

In some cases, the lessons require additional materials or components that schools should provide or loan, indicated in Section 4 (Subject structure overview) above. Safety warnings are given where appropriate, for example, when scissors are required in the lesson.

It is our intention to contextualise learning where possible and applicable. This real-life application and understanding of D&T is important to show how D&T skills, knowledge and key learning are relevant and applicable in a vast number of areas of work, consumer choices and everyday life.

8. Motivation through education

D&T engages pupils in learning how to design and make, in order to improve the world they live in.

Where possible, we draw on real-world experiences to provide an engaging context for developing, designing and making skills and knowledge. Every pupil should have the opportunity to make use of their designing and making skills and knowledge and, through this, develop personal achievement. We provide opportunities for pupils to be creative and solve problems by developing their own solutions to real-world contexts and offer (where possible and applicable) various methods to communicate their ideas and understanding.

9. A curriculum of quality

The D&T curriculum has been put together with careful consideration and by consulting with specialists from ITT, secondary and primary education. This wealth of expertise has resulted in an effective, exciting, relevant, and challenging curriculum for pupils and teachers to engage in. The learning in Key Stages 1 and 2 should provide a good foundation for learning in Key Stage 3 and beyond.

10. Curriculum design constraints

The D&T curriculum features 20 lessons per Year Group for Key Stage 2, split into two equal units. This is a significantly reduced provision compared to what should ideally be available in a school context and as a result does not fully address all aspects of an ideal D&T curriculum and the national curriculum programmes of study. Due to the constraints of asynchronous learning, there is no easy way to ensure full curriculum coverage. Whilst the curriculum coverage is reduced, we are confident that the fundamentals of a quality D&T curriculum remain and allow both teachers and pupils to benefit from the offering.

