Design and Technology

RECEPTION

Range of activities referenced to Foundation Stage Guidance Materials , providing stepping stones of breadth and creativity
Cutting/gluing/folding card, Reclaimed materials- vehicles, Baking and decorating biscuits, Design handkerchief, Container making, Design a kite, Easter baskets, Gingerbread, Porridge, Puppets, Reclaimed materials- minibeasts, Fixings,
Chinese New Year activities.

Ongoing skills in Years 1 and 2

Understanding contexts, users and purposes

Across KS1 pupils should:

- work confidently within a range of contexts, such as imaginary, story-based, home, school, gardens, playgrounds, local community, industry and the wider environment
- state what products they are designing and making
- say whether their products are for themselves or other users
- describe what their products are for
- say how their products will work
- say how they will make their products suitable for their intended users
- use simple design criteria to help develop their ideas

Generating, developing, modelling and communicating ideas

Across KS1 pupils should:

- generate ideas by drawing on their own experiences
- use knowledge of existing products to help come up with ideas
- develop and communicate ideas by talking and drawing
- model ideas by exploring materials, components and construction kits and by making templates and mock-ups
- use information and communication technology, where

Making

Planning

Across KS1 pupils should:

- plan by suggesting what to do next
- select from a range of tools and equipment, explaining their choices
- select from a range of materials and components according to their characteristics

Practical skills and techniques

Across KS1 pupils should:

- follow procedures for safety and hygiene
- use a range of materials and components, including construction materials and kits, textiles, food ingredients and mechanical components

measure, mark out, cut and shape materials and components

- assemble, join and combine materials and components
- use finishing techniques, including those from art and design

Evaluating

Own ideas and products

Across KS1 pupils should:

- talk about their design ideas and what they are making
- make simple judgements about their products and ideas against design criteria
- suggest how their products could be improved

Existing products

Across KS1 pupils should explore:

- what products are
- who products are for
- what products are for
- how products are used
- where products might be used
- what materials products are made from
- what they like and dislike about products

YEAR 1 Homes	Food – Farm to fork	Moving Pictures
Technical Knowledge **Making products work** Across KS1 pupils should know: - about the simple working characteristics of materials and components - how freestanding structures can be made stronger, stiffer and more stable - the correct technical vocabulary for the projects they are undertaking	**Cooking and nutrition** **Where food comes from** Across KS1 pupils should know: - that all food comes from plants or animals - that food has to be farmed, grown elsewhere (e.g. home) or caught **Food preparation, cooking and nutrition** Across KS1 pupils should know: - how to name foods into the five groups in *The eatwell plate* - that everyone should eat at least five portions of fruit and vegetables every day - how to prepare simple dishes safely and hygienically, without using a heat source - how to use techniques such as cutting	**Technical Knowledge** **Making products work** Across KS1 pupils should know: - about the simple working characteristics of materials and components - about the movement of simple mechanisms such as levers and sliders - the correct technical vocabulary for the projects they are undertaking

YEAR 2 Puppets	Food technology – healthy snacks	Moving vehicles – wheels and axles
Technical Knowledge **Making products work** Across KS1 pupils should know: • about the simple working characteristics of materials and components • that a 3-D textiles product can be assembled from two identical fabric shapes • the correct technical vocabulary for the projects they are undertaking	**Cooking and nutrition** **Where food comes from** Across KS1 pupils should know: • that all food comes from plants or animals • that food has to be farmed, grown elsewhere (e.g. home) or caught **Food preparation, cooking and nutrition** Across KS1 pupils should know: • how to name and sort foods into the five groups in *The eatwell plate* • that everyone should eat at least five portions of fruit and vegetables every day • how to prepare simple dishes safely and hygienically, without using a heat source • how to use techniques such as cutting, peeling and grating	**Technical Knowledge** **Making products work** Across KS1 pupils should know: • about the simple working characteristics of materials and components • about the movement of simple mechanisms such as wheels and axles • the correct technical vocabulary for the projects they are undertaking

Ongoing skills in Years 3 and 4

Understanding contexts, users and purposes

Across KS2 pupils should:

- 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
- indicate the design features of their products that will appeal to intended users
- explain how particular parts of their products work

In early KS2 pupils should also:

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

Generating, developing, modelling and communicating ideas

Across KS2 pupils should:

- share and clarify ideas through discussion
- model their ideas using prototypes and pattern pieces
- use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas
- use computer-aided design to develop and communicate their ideas

In early KS2 pupils should also:
 generate realistic ideas, focusing on the needs of the user
 make design decisions that take account of the availability of resources

Making

Planning

Across KS2 pupils should:
 select tools and equipment suitable for the task
 explain their choice of tools and equipment in relation to the skills and techniques they will be using
 select materials and components suitable for the task
 explain their choice of materials and components according to functional properties and aesthetic qualities

In early KS2 pupils should also:
 order the main stages of making

Practical skills and techniques

Across KS2 pupils should:
 follow procedures for safety and hygiene
 use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components

In early KS2 pupils should also:
 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

Evaluating

Own ideas and products

Across KS2 pupils should:
 identify the strengths and areas for development in their ideas and products
 consider the views of others, including intended users, to improve their work

In early KS2 pupils should also:
 refer to their design criteria as they design and make
 use their design criteria to evaluate their completed products

Existing products

Across KS2 pupils should investigate and analyse:
 how well products have been designed
 how well products have been made
 why materials have been chosen
 what methods of construction have been used
 how well products work
 how well products achieve their purposes
 how well products meet user needs and wants

In early KS2 pupils should also investigate and analyse:
 who designed and made the products
 where products were designed and made
 when products were designed and made
 whether products can be recycled or reused

Key events and individuals

Across KS2 pupils should know:
 about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products

YEAR 3 Moving vehicles	Moving books	Sandwich snacks
Technical Knowledge **Making products work** Across KS2 pupils should know: how to use learning from science to help design and make products that work how to use learning from mathematics to help design and make products that work that materials have both functional properties and aesthetic qualities that materials can be combined and mixed to create more useful characteristics that mechanical and electrical systems have an input, process and output the correct technical vocabulary for the projects they are undertaking In early KS2 pupils should also know: how mechanical systems such as pneumatic systems create movement how to make strong, stiff shell structures	**Technical Knowledge** **Making products work** Across KS2 pupils should know: how to use learning from science to help design and make products that work how to use learning from mathematics to help design and make products that work that materials have both functional properties and aesthetic qualities that materials can be combined and mixed to create more useful characteristics that mechanical and electrical systems have an input, process and output the correct technical vocabulary for the projects they are undertaking In early KS2 pupils should also know: how mechanical systems such as levers and linkages create movement	**Cooking and nutrition** **Where food comes from** Across KS2 pupils should know: 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 **Food preparation, cooking and nutrition** Across KS2 pupils should know: 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, and spreading, In early KS2 pupils should also know: that a healthy diet is made up from a variety and balance of different foods and drinks, as depicted in *The eatwell plate* that to be active and healthy, food is needed to provide energy for the body **Making products work** that food ingredients can be fresh, pre-cooked and processed

YEAR 4 Biscuits	Textiles	Alarms
Cooking and nutrition **Where food comes from** Across KS2 pupils should know: • 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 **Food preparation, cooking and nutrition** Across KS2 pupils should know: • 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 mixing, kneading and baking In early KS2 pupils should also know: • that a healthy diet is made up from a variety and balance of different foods and drinks, as depicted in *The eatwell plate* • that to be active and healthy, food is needed to provide energy for the body **Making products work** that food ingredients can be fresh, pre-cooked and processed	**Technical Knowledge** **Making products work** Across KS2 pupils should know: • how to use learning from science to help design and make products that work • how to use learning from mathematics to help design and make products that work • that materials have both functional properties and aesthetic qualities • that materials can be combined and mixed to create more useful characteristics • that mechanical and electrical systems have an input, process and output • the correct technical vocabulary for the projects they are undertaking In early KS2 pupils should also know: • that a single fabric shape can be used to make a 3D textiles product	**Technical Knowledge** **Making products work** Across KS2 pupils should know: • how to use learning from science to help design and make products that work • how to use learning from mathematics to help design and make products that work • that materials have both functional properties and aesthetic qualities • that materials can be combined and mixed to create more useful characteristics • that mechanical and electrical systems have an input, process and output • the correct technical vocabulary for the projects they are undertaking In early KS2 pupils should also know: • how simple electrical circuits and components can be used to create functional products • how to program a computer to control their products

Ongoing skills in Years 5 and 6

Understanding contexts, users and purposes
Across KS2 pupils should:
• 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
• indicate the design features of their products that will appeal to intended users
• explain how particular parts of their products work

In late KS2 pupils should also:
 carry out research, using surveys, interviews, questionnaires and web-based resources
 identify the needs, wants, preferences and values of particular individuals and groups
 develop a simple design specification to guide their thinking

Generating, developing, modelling and communicating ideas

Across KS2 pupils should:
 share and clarify ideas through discussion
 model their ideas using prototypes and pattern pieces
 use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas
 use computer-aided design to develop and communicate their ideas

In late KS2 pupils should also:
 generate innovative ideas, drawing on research
 make design decisions, taking account of constraints such as time, resources and cost

Making

Planning

Across KS2 pupils should:
 select tools and equipment suitable for the task
 explain their choice of tools and equipment in relation to the skills and techniques they will be using
 select materials and components suitable for the task
 explain their choice of materials and components according to functional properties and aesthetic qualities

In late KS2 pupils should also:
 produce appropriate lists of tools, equipment and materials that they need
 formulate step-by-step plans as a guide to making

Practical skills and techniques

Across KS2 pupils should:
 follow procedures for safety and hygiene
 use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components

In late KS2 pupils should also:
 accurately measure, mark out, cut and shape materials and components
 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
 demonstrate resourcefulness when tackling practical

Evaluating

Own ideas and products

Across KS2 pupils should:
 identify the strengths and areas for development in their ideas and products

 consider the views of others, including intended users, to improve their work
In late KS2 pupils should also:
 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

Existing products

Across KS2 pupils should investigate and analyse:
 how well products have been designed
 how well products have been made
 why materials have been chosen
 what methods of construction have been used
 how well products work
 how well products achieve their purposes
 how well products meet user needs and wants

In late KS2 pupils should also investigate and analyse:
 how much products cost to make
 how innovative products are
 how sustainable the materials in products are
 what impact products have beyond their intended purpose

Key events and individuals

Across KS2 pupils should know:
 about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products

YEAR 5 Moving toys - cams	Bread	Bridges
Technical Knowledge **Making products work** Across KS2 pupils should know: how to use learning from science to help design and make products that work how to use learning from mathematics to help design and make products that work that materials have both functional properties and aesthetic qualities that materials can be combined and mixed to create more useful characteristics that mechanical and electrical systems have an input, process and output the correct technical vocabulary for the projects they are undertaking	**Cooking and nutrition** **Where food comes from** Across KS2 pupils should know: 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 In late KS2 pupils should also know: that seasons may affect the food available how food is processed into ingredients that can be eaten or used in cooking	**Technical Knowledge** **Making products work** Across KS2 pupils should know: how to use learning from science to help design and make products that work how to use learning from mathematics to help design and make products that work that materials have both functional properties and aesthetic qualities that materials can be combined and mixed to create more useful characteristics that mechanical and electrical systems have an input, process and output the correct technical vocabulary for the projects they are undertaking

In late KS2 pupils should also know: how mechanical systems such as cams create movement how to reinforce and strengthen a 3D framework	**Food preparation, cooking and nutrition** Across KS2 pupils should know: 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 In late KS2 pupils should also know: that recipes can be adapted to change the appearance, taste, texture and aroma that different foods contain different substances - nutrients, water and fibre - that are needed for health **Making products work** that a recipe can be adapted a by adding or substituting one or more ingredients	In late KS2 pupils should also know: how to reinforce and strengthen a 3D framework
<u>YEAR 6 Textiles</u> **Technical Knowledge** **Making products work** Across KS2 pupils should know: how to use learning from science to help design and make products that work how to use learning from mathematics to help design and make products that work that materials have both functional properties and aesthetic qualities that materials can be combined and mixed to create more useful characteristics that mechanical and electrical systems have an input, process and output the correct technical vocabulary for the projects they are undertaking	<u>Food technology – family meals for a fiver</u> **Cooking and nutrition** **Where food comes from** Across KS2 pupils should know: 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 In late KS2 pupils should also know: that seasons may affect the food available how food is processed into ingredients that can be eaten or used in cooking **Food preparation, cooking and nutrition** Across KS2 pupils should know:	<u>Fairground rides</u> **Technical Knowledge** **Making products work** Across KS2 pupils should know: how to use learning from science to help design and make products that work how to use learning from mathematics to help design and make products that work that materials have both functional properties and aesthetic qualities that materials can be combined and mixed to create more useful characteristics that mechanical and electrical systems have an input, process and output the correct technical vocabulary for the projects they are undertaking

In late KS2 pupils should also know: that a 3D textiles product can be made from a combination of fabric shapes	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 In late KS2 pupils should also know: that recipes can be adapted to change the appearance, taste, texture and aroma that different foods contain different substances - nutrients, water and fibre - that are needed for health **Making products work** that a recipe can be adapted a by adding or substituting one or more ingredients	In late KS2 pupils should also know: how mechanical systems such as pulleys or gears create movement 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