



Design Technology

Milestones

Nursery and Reception	End of Key Stage 1
<p><u>Early Learning Goals</u> <u>Expressive Arts and Design – Creating with Materials</u></p> <ul style="list-style-type: none"> • Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. • Share their creations, explaining the process they have used. • Make use of props and materials when role playing characters in narratives and stories. <p><u>Nursery</u> <u>Birth to Three</u> <u>Expressive Arts and Design</u></p> <ul style="list-style-type: none"> • Notice patterns with strong contrasts and be attracted by patterns resembling the human face. • Start to make marks intentionally. • Explore paint, using fingers and other parts of their bodies as well as brushes and other tools. • Express ideas and feelings through making marks, and sometimes give a meaning to the marks they make. • Explore different materials, using all their senses to investigate them. Manipulate and play with different materials. • Use their imagination as they consider what they can do with different materials. • Make simple models which express their ideas. 	<p><u>DESIGNING- Understanding contexts, users and purposes</u></p> <ul style="list-style-type: none"> • work confidently within a range of contexts, such as imaginary, storybased, 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 <p><u>Generating, developing, modelling and communicating ideas</u></p> <ul style="list-style-type: none"> • 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 appropriate, to develop and communicate their ideas <p><u>MAKING-Planning</u></p> <ul style="list-style-type: none"> • 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

Three and Four Year olds

- Explore different materials freely, to develop their ideas about how to use them and what to make.
- Develop their own ideas and then decide which materials to use to express them.
- Join different materials and explore different textures.

Reception

Expressive Arts and Design

- Explore, use and refine a variety of artistic effects to express their ideas and feelings.
- Return to and build on their previous learning, refining ideas and developing their ability to represent them.
- Create collaboratively, sharing ideas, resources and skills.

Practical skills and techniques

- 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

- 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

Explore:

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

Key events and individuals

- Not a requirement at KS1

TECHNICAL KNOWLEDGE

_Making products work

Know:

- about the simple working characteristics of materials and components
- about the movement of simple mechanisms such as levers, sliders, wheels and axles
- how freestanding structures can be made stronger, stiffer and more stable
- that a 3-D textiles product can be assembled from two identical fabric shapes
- that food ingredients should be combined according to their sensory characteristics
- the correct technical vocabulary for the projects they are undertaking

COOKING & NUTRITION

Where food comes from

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

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

End of Lower Key Stage 2

DESIGNING

Understanding contexts, users and purposes

- 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
- 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

- 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
- generate realistic ideas, focusing on the needs of the user
- make design decisions that take account of the availability of resources

MAKING

Planning

- 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
- order the main stages of making

Practical skills and techniques

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

End of Upper Key Stage 2

DESIGNING

Understanding contexts, users and purposes

- 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
- carry out research, using surveys, interviews, questionnaires and web-based resources
- identify the needs, wants, preferences and values of particular individuals and groups

Generating, developing, modelling and communicating ideas

- develop a simple design specification to guide their thinking
- 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
- generate innovative ideas, drawing on research
- make design decisions, taking account of constraints such as time, resources and cost

MAKING

Planning

- 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
- 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

- follow procedures for safety and hygiene

- apply a range of finishing techniques, including those from art and design, with some accuracy

EVALUATING

Own ideas and 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
- refer to their design criteria as they design and make
- use their design criteria to evaluate their completed products

Existing products

Investigate & 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
- 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

Know:

- about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products

TECHNICAL KNOWLEDGE

Making products work

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
- how mechanical systems such as levers and linkages or pneumatic systems create movement

- use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components

- 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 problems

EVALUATING

Own ideas and 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
- 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

Investigate & 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
- 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

Know:

- about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products

TECHNICAL KNOWLEDGE

Making products work

Know:

- how to use learning from science to help design and make products that work

- how simple electrical circuits and components can be used to create functional products
- how to program a computer to control their products
- how to make strong, stiff shell structures
- that a single fabric shape can be used to make a 3D textiles product
- that food ingredients can be fresh, pre-cooked and processed

COOKING & NUTRITION

Where food comes from

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

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
- that a healthy diet is made up from a variety and balance of different food and drink, as depicted in The eatwell plate
- that to be active and healthy, food and drink are needed to provide energy for the body

- 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
- how mechanical systems such as cams or 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
- how to reinforce and strengthen a 3D framework
- that a 3D textiles product can be made from a combination of fabric shapes
- that a recipe can be adapted by adding or substituting one or more ingredients

COOKING & NUTRITION

Where food comes from

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
- 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

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
- that recipes can be adapted to change the appearance, taste, texture and aroma
- that different food and drink contain different substances – nutrients, water and fibre – that are needed for health