Intent and Implementation of Endpoints – D.T.

Intent

It is our intent for Design Technology at Robertswood to give children the opportunity to develop new skills, knowledge and understanding of designing and making functional products which will excite, inspire and nurture children to think independently, creatively and imaginatively and to design and make products by exploring the designed and made world in which we all live and work.

We want the children at Robertswood to become confident to plan and explore their own ideas through a range of different creative and practical activities and skills exploring products, materials, equipment and techniques to develop knowledge, understanding, skills and technical expertise. This will enable them to engage in a process of design and making, creating a range of structures, mechanisms, textiles, electrical systems and food products with purpose and enthusiasm and making sure to take into account their products purposes and users.

Children will learn how to take risks, understand the value of making mistakes and develop the confidence to pave their way through challenges, becoming resourceful, innovative and enterprising.

They will learn to review, evaluate and test their ideas and products and the work of others drawing inspiration from engineers, architects, designers and chefs. Through the exploration of past and present design and technology they will develop a critical understanding of its huge impact on daily life and the wider world.

Implementation

Projects on a Page by the Design and Technology Association will provide a structure for planning and progression of DT across school. Teaching of DT will follow the design, make, evaluate cycle. Topics will be rooted in relevant contexts, real or imaginary that stimulate interest and give opportunities to develop technical skills. An annual subject overview ensures children explore structures/construction, mechanisms, electrical, food technology and textiles. Opportunities to link with Information technology will be included. Work will be presented in a class workbook. Labelled sections will develop an understanding of the design process that follows through to secondary school and beyond. The progression document will ensure skills are developed year on year.

Design Brief- To present in context the problem and what product they need to research, design and make.

Success Criteria- look at the brief/ existing designs how will you know you've achieved it?

Research- includes…

- **Investigating-** finding examples to look at- internet/ books/ classroom/ home
- **Disassembly**- taking an example apart- what parts does it have? How do they work? What are they made from?
- **Skills focus-** what skills do the children need to be able to do- fixing techniques, food preparation techniques, techniques to make moving mechanisms, techniques to use with thread and fabric.
- **Mock-ups/ models/ patterns-** quick paper/card models or patterns to test an idea or to provide a template to follow.

Designing- Using all aspects of the research carried out draw annotated sketches- labelled diagrams- notes. Make lists of materials, equipment/ brief sequence of making.

Making- using the success criteria/ design/plan/notes but encouraged to adapt as they go along. As children go up the school "the finish" will be increasingly important.

Evaluation- Test and evaluate against success criteria and make comparisons to existing products.

As they progress through KS2 they will also consider how key events and individuals have helped shape design and technology globally to consider products in context

Impact

Children will develop creative, technical and practical expertise to confidently complete everyday tasks and take part in our increasingly technological world.

They will build and apply a toolkit of skills, develop knowledge and understanding in order to make high quality prototypes and products for a range of users and test and evaluate their ideas and products and those of others.

They will understand and apply the principles of nutrition and learn how to cook.

Children will learn how to take risks becoming resourceful, innovative, enterprising. Through evaluation of past and present design technology they will develop a critical understanding of its impact on daily life. High quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being in the world where we all live and work

	Annual Subject Overview		DT 21-22
	AUTUMN	SPRING	SUMMER
Nursery	Sandwiches Biscuits Diva Lamps Christmas Cake Clay Christmas decorations	Decorating gingerbread men Making Bread Tasting Chinese food Easter Nests Mother's Day	Making a picnic Making fruit salad Father's Day Model magic
Reception	Shape Biscuits Model magic Christmas decorations	Tasting Chinese food Easter nests Mother's Day	Making sandwiches Father's Day
Year 1	**STRUCTURES** *Free standing structures* Design a chair for Baby Bear	**MECHANISMS** *Sliders and Levers* Moving pictures Traditional Tales	**FOOD** *Preparing fruit and vegetables* Fruit Jelly
Year 2	**FOOD** *Preparing fruit and vegetables* Fruit Kebabs	**MECHANISMS** *Wheels and Axles* Toy vehicles	**TEXTILES** *Templates and joining techniques* Puppets
Year 3	**STRUCTURES** *Shell structures* Photo Frames	**MECHANICAL SYSTEMS** *Levers and Linkages* Moving monsters	**FOOD** *Health and varied diet* Sandwiches
Year 4	**TEXTILES** *2D shape to 3D product* Xmas stockings	**FOOD** *Healthy and varied diet* Easter Shortbread	**ELECTRICAL SYSTEMS** *Simple circuits and switches* Nightlights
Year 5	**FOOD** *Celebrating culture and seasonality* Bread Making	**MECHANICAL SYSTEMS** *Pulleys and Gears* Moving toys	**STRUCTURES** *Frame Structures* 3D Structures
Year 6	**TEXTILES** *Combining different fabric shapes* Slippers	**FOOD** *Celebrating culture and seasonality* Soup	**ELECTRICAL SYSTEMS** *More complex switches and circuits* Crumble Controller

By the end of Reception, pupils will know and be able to:

- use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function
- use what they have learnt about media and materials in original ways, thinking about uses and purposes
- represent their own ideas, thoughts and feelings through design and technology

By the end of year 1 pupils will know and be able to:

Recognises characteristics of familiar products.
Makes a simple design for a product.
Makes a simple product with support.
Uses appropriate materials and small tools and equipment safely.
Makes comments about their work.
Shows awareness of hygiene and simple techniques in food preparation.

By the end of year 2 pupils will know and be able to:

<u>Understanding contexts, users and purposes</u>

- 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

<u>Generating, developing, modelling and communicating ideas</u>

- 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

<u>Planning</u>

- 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

- 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

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

- 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

Making products work

- 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
- 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

Where food comes from

- 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

- 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

By the end of year 3 pupils will know and be able to:

Investigates existing products.
Uses a given design brief and design criteria to produce a final product.
Uses appropriate small tools and equipment safely and accurately.
Evaluates products against design criteria and suggests improvements.
Uses a range of techniques e.g. spreading and mixing, to prepare food for a party, safely and hygienically.

By the end of year 4 pupils will know and be able to:

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

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

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

Events and individuals

Across KS2 pupils should know:

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

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 or pneumatic systems create movement
- 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

Where food comes from

Across KS2 pupils should know:

- that a recipe can be adapted a by adding or substituting one or more ingredients
- 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 early KS2 pupils should also know:

- 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

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 early KS2 pupils should also know:

- 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

By the end of year 5 pupils will know and be able to:

Analyses existing products.
Generates their own design criteria, considering appearance, purpose and construction.
Uses a variety of appropriate techniques, materials and tools safely and accurately.
Produces an evaluation of the finished product, identifying strengths and weaknesses of the design.
Uses a range of techniques to prepare and cook savoury dishes safely and hygienically.

By the end of year 6 pupils will know and be able to:

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

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 problems

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

Events and individuals

Across KS2 pupils should know:

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

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 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

Where food comes from

Across KS2 pupils should know:

- that a recipe can be adapted a by adding or substituting one or more ingredients
- 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 early KS2 pupils should also know:

- 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

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:

- 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 food and drink contain different substances – nutrients, water and fibre – that are needed for health