Design & Technology Knowledge Sequencing at Knavesmire Primary

Design & Technology Understanding, Knowledge and Skills objectives:	
Intent:	At Knavesmire, Design and Technology (DT) prepares children to take part in the development of tomorrow's changing world. Our Intent is that the subject encourages children to become autonomous and creative problem solvers, both as individuals and as part of a team where they are also able to develop their innovative thinking. Design and Technology enables them to identify needs and opportunities and to respond by developing ideas, reflecting and evaluating present and past design technology and eventually making products and systems.
Substantive knowledge in Design & Technology:	By the end of Key Stage Two, children at Knavesmire will be able to: prepare ingredients safely and hygienically and cook nutritious food. They will be able to design their own products using a range of materials and evaluate their product against success criteria. The children will generate their own product ideas by reflecting upon existing products and then developing prototypes. Finally, in order to make successful products, the children will have a secure understanding of mechanical structures, such as: gears, pulley systems and levers.
Disciplinary knowledge in Design & Technology:	Children from Knavesmire will be able to participate fully in an increasingly technological world and have an understanding of how to be critical and reflective consumers. They will be able to use their practical, creative and reflective skills to become consumers and innovators who are well informed and can use their own skills to develop products for the future.
Design & Technology:	Problem solving through developing ideas, disassembly and design - creating things that are better and evaluating to demonstrate that they can be even better if.

Sequence of Knowledge for Design & Technology:

Nursery

Aims and objectives:

Design and technology prepares children to take part in the development of tomorrow's changing world. Creative thinking encourages children to make positive changes to their quality of life. The subject encourages children to become autonomous and creative problem solvers, both as individuals and as part of a team. It enables them to identify needs and opportunities and to respond by developing ideas and eventually making products and systems. Through the study of Design and Technology they combine practical skills with an understanding of aesthetic, social and environmental issues, as well as functions and industrial practices. This allows them to reflect on and evaluate present and past design technology, its uses and its impacts. Design and technology helps children to become discriminating and informed consumers and potential innovators.

The aims of design and technology are:

- To develop imaginative thinking in children and to enable them to talk about what they like and dislike when designing and making;
- To enable children to talk about how things work and to draw and model their ideas;
- To encourage children to select appropriate tools and techniques for making a product, whilst following safe procedures; To explore attitudes towards the material world and how we live and work in it;
- To develop an understanding of technological processes, products and their manufacture, and their contribution to our society;
- To foster enjoyment, satisfaction and purpose in designing and making.

Early Years are building the foundations for success in the DT National Curriculum through **Expressive Arts and Design, Physical Development, Personal, Social and Emotional Development and Communication and Language.**

Design and Technology Strands:	
Design	**Make**
Have and discuss some ideas of things they would like to make or create. (C&L, EAD)	With some adult support, select and use resources to help them reach a goal. (PSED) Explore how things work. (PHY) Make shapes and structures. (EAD, MAT) Make marks using large and small movements.
Evaluate	**Technical Knowledge**
Say what they have made. (C&L)	To manipulate materials (tear, scrunch, stick) to create a piece of work. (EAD, PHY)

Sequence of Knowledge for Design & Technology:

Reception

Aims and objectives:

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- To enable children to talk about how things work and to draw and model their ideas;
- To encourage children to select appropriate tools and techniques for making a product, whilst following safe procedures;
- To explore attitudes towards the material world and how we live and work in it;
- To develop an understanding of technological processes, products and their manufacture, and their contribution to our society;
- To foster enjoyment, satisfaction and purpose in designing and making.

Early Years are building the foundations for success in the DT National Curriculum through **Expressive Arts and Design, Physical Development, Personal, Social and Emotional Development and Communication and Language.**

Design and Technology Strands:	
Design	**Make**
Discuss ideas and begin to plan what they would like to make. (C&L, PSED) Choose and select from a range of media to help them to achieve their goals. (PSED)	Cut and prepare ingredients safely and hygienically. (PHY, PSED) Tear and cut paper or card. (EAD, PHY) Use glue or tape to join. (EAD, PHY) Measure dry ingredients with increasing independence using measuring cups. (MAT) Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. (EAD)
Evaluate	**Technical Knowledge**
Explain what they have made and why. (C&L, PSED)	Develop fine and gross motor skills to hold pencils, paintbrushes, knives and forks and other tools. (PHY) Use a range of tools and techniques to achieve the desired effect with increasing independence. (PHY, EAD)

Sequence of Knowledge for Design & Technology:

Year 1

Aims and objectives:

Design and technology prepares children to take part in the development of tomorrow's changing world. Creative thinking encourages children to make positive changes to their quality of life. The subject encourages children to become autonomous and creative problem solvers, both as individuals and as part of a team. It enables them to identify needs and opportunities and to respond by developing ideas and eventually making products and systems. Through the study of Design and Technology they combine practical skills with an understanding of aesthetic, social and environmental issues, as well as functions and industrial practices. This allows them to reflect on and evaluate present and past design technology, its uses and its impacts. Design and technology helps children to become discriminating and informed consumers and potential innovators.

The aims of design and technology are:

- To develop imaginative thinking in children and to enable them to talk about what they like and dislike when designing and making;
- To enable children to talk about how things work and to draw and model their ideas;
- To encourage children to select appropriate tools and techniques for making a product, whilst following safe procedures;
- To explore attitudes towards the material world and how we live and work in it;
- To develop an understanding of technological processes, products and their manufacture, and their contribution to our society;
- To foster enjoyment, satisfaction and purpose in designing and making.

In Year 1, the four main **Design and Technology Strands** of Designing, Making, Evaluating and Technical Knowledge will be taught through the **Design and Technology Contexts** of Cooking and Nutrition and Mechanical.

Design and Technology Contexts:			
A	**Cooking and nutrition**	B	**Mechanical**
Design and Technology Strands:			
Design		**Make**	
1	• Design a purposeful, functional and appealing product. • Talk about their ideas. • Generate ideas for products by drawing on their own experiences. • Use pictures to convey what they want to make. • Explain which materials they will use for their product.	2	• Make a product with construction materials which contain wheels and axles e.g. tubes, dowel and cotton reels. • Select from and use construction materials, according to their characteristics. • Select from and use tools to help them make their product. • Understand what makes a healthy diet. • Prepare a simple savoury dish.
Evaluate		**Technical Knowledge**	
3	• Say what they like about their product and why.	4	• Build structures and explore how they can be made stronger and more stable. • Explore and use mechanisms with wheels. • Understand what makes a healthy diet. • Prepare ingredients safely and hygienically to produce simple dishes without using a heat source

Sequence of Knowledge for Design & Technology:

Year 2

Aims and objectives:

Design and technology prepares children to take part in the development of tomorrow's changing world. Creative thinking encourages children to make positive changes to their quality of life. The subject encourages children to become autonomous and creative problem solvers, both as individuals and as part of a team. It enables them to identify needs and opportunities and to respond by developing ideas and eventually making products and systems. Through the study of Design and Technology they combine practical skills with an understanding of aesthetic, social and environmental issues, as well as functions and industrial practices. This allows them to reflect on and evaluate present and past design technology, its uses and its impacts. Design and technology helps children to become discriminating and informed consumers and potential innovators.

The aims of design and technology are:

- To develop imaginative thinking in children and to enable them to talk about what they like and dislike when designing and making;
- To enable children to talk about how things work and to draw and model their ideas;
- To encourage children to select appropriate tools and techniques for making a product, whilst following safe procedures; · To explore attitudes towards the material world and how we live and work in it;
- To develop an understanding of technological processes, products and their manufacture, and their contribution to our society;
- To foster enjoyment, satisfaction and purpose in designing and making.

In Year 2, the four main **Design and Technology Strands** of Designing, Making, Evaluating and Technical Knowledge will be taught through the **Design and Technology Contexts** of Cooking and Nutrition and Materials.

Design and Technology Contexts:			
A	**Cooking and nutrition**	B	**Materials**
Design and Technology Strands:			
Design		**Make**	
1	• Design a purposeful, functional and appealing product. • Communicate their ideas through talking and drawing. • Use knowledge of existing products to help come with ideas for their own products. • Model ideas by exploring materials and making templates and mock-ups and explain how their products will work. • Design a purposeful product based on design criteria.	2	• Make a product using **textiles and fabrics** as the choice of materials. • Select from and use a wide range of materials to cut, shape, join and finish their product. • Select from and use a wide range of materials, according to their characteristics. • Understand where food comes from. • Prepare a simple savoury dish.
Evaluate		**Technical Knowledge**	
3	• Explore and evaluate a range of existing products to help inform their own product ideas. • Talk about how their finished product meets the design criteria.	4	• Explore how materials can be made stronger, stiffer and more stable. • Understand where food comes from. • Cut and prepare ingredients safely and hygienically to produce simple dishes without using a heat source.

Sequence of Knowledge for Design & Technology:

Year 3

Aims and objectives:

Design and technology prepares children to take part in the development of tomorrow's changing world. Creative thinking encourages children to make positive changes to their quality of life. The subject encourages children to become autonomous and creative problem solvers, both as individuals and as part of a team. It enables them to identify needs and opportunities and to respond by developing ideas and eventually making products and systems. Through the study of Design and Technology they combine practical skills with an understanding of aesthetic, social and environmental issues, as well as functions and industrial practices. This allows them to reflect on and evaluate present and past design technology, its uses and its impacts. Design and technology helps children to become discriminating and informed consumers and potential innovators.

The aims of design and technology are:

- To develop imaginative thinking in children and to enable them to talk about what they like and dislike when designing and making;
- To enable children to talk about how things work and to draw and model their ideas;
- To encourage children to select appropriate tools and techniques for making a product, whilst following safe procedures; · To explore attitudes towards the material world and how we live and work in it;
- To develop an understanding of technological processes, products and their manufacture, and their contribution to our society;
- To foster enjoyment, satisfaction and purpose in designing and making.

In Year 3, the four main **Design and Technology Strands** of Designing, Making, Evaluating and Technical Knowledge will be taught through the **Design and Technology Contexts** of Cooking and Nutrition and Materials.

Design and Technology Contexts:			
A	**Cooking and nutrition**	B	**Materials**

Design and Technology Strands:	
Design	**Make**
1	• Research existing products to inform their own product designs. • Help to generate the success criteria for their product. • Generate designs with annotated sketches. • Develop their ideas through discussion. Does their design fit the success criteria? Is it fit for purpose and for the target audience?
2	• Make a product using **textiles and fabrics** as the choice of materials. • Select from a range of textiles and fabrics, based on their functional properties and what they look like. • Select from and use a range of tools and equipment to cut and measure accurately. • Understand what makes a healthy diet. • Follow a recipe to prepare a savoury dish. • Measure and weigh ingredients appropriately. •
Evaluate	**Technical Knowledge**
2	• Investigate a range of existing products. • Evaluate their product against the design criteria. • Consider how they could improve their work. • *Where appropriate, consider how significant events and individuals in DT have helped to shape the world.*
4	• Apply their understanding of how to strengthen, stiffen and reinforce materials. • Understand and apply the principles of a healthy diet.

Sequence of Knowledge for Design & Technology:

Year 4

Aims and objectives:

Design and technology prepares children to take part in the development of tomorrow's changing world. Creative thinking encourages children to make positive changes to their quality of life. The subject encourages children to become autonomous and creative problem solvers, both as individuals and as part of a team. It enables them to identify needs and opportunities and to respond by developing ideas and eventually making products and systems. Through the study of Design and Technology they combine practical skills with an understanding of aesthetic, social and environmental issues, as well as functions and industrial practices. This allows them to reflect on and evaluate present and past design technology, its uses and its impacts. Design and technology helps children to become discriminating and informed consumers and potential innovators.

The aims of design and technology are:

- To develop imaginative thinking in children and to enable them to talk about what they like and dislike when designing and making;
- To enable children to talk about how things work and to draw and model their ideas;
- To encourage children to select appropriate tools and techniques for making a product, whilst following safe procedures;
- To explore attitudes towards the material world and how we live and work in it;
- To develop an understanding of technological processes, products and their manufacture, and their contribution to our society;
- To foster enjoyment, satisfaction and purpose in designing and making.
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In Year 4, the four main **Design and Technology Strands** of Designing, Making, Evaluating and Technical Knowledge will be taught through the **Design and Technology Contexts** of Cooking and Nutrition and Mechanical/Construction.

Design and Technology Contexts:			
A	**Cooking and nutrition**	B	**Mechanical/Construction**

Design and Technology Strands:			
Design		**Make**	
1	• Use research of existing products to develop design criteria for their own products. • Design innovative, functional and appealing products that are fit for purpose. • Generate and develop their ideas through annotated sketches and prototypes.	2	• Make a product using construction materials. • Use mechanical systems in their products e.g. gears and pulleys. • Select from and use a range of tools and equipment. • Select from and use a range of construction materials, using their functional properties and what they look like. • Understand the principles of a healthy diet. • Follow a recipe to prepare and make a savoury dish (with or without a heat source). • Measure ingredients, for the savoury dish, using scales.
Evaluate		**Technical Knowledge**	
3	• Investigate and analyse a range of existing products. • Evaluate their product against their design criteria. • Consider how they could improve their work. • *Where appropriate, consider how significant events and individuals in DT have helped to shape the world.*	4	• Understand and use mechanical structures in their products e.g. gears, pulleys, levers and gears. • Apply their understanding of how to strengthen, stiffen and reinforce structures. • Understand and apply the principles of a healthy diet.

Sequence of Knowledge for Design & Technology:

Year 5

Aims and objectives:

Design and technology prepares children to take part in the development of tomorrow's changing world. Creative thinking encourages children to make positive changes to their quality of life. The subject encourages children to become autonomous and creative problem solvers, both as individuals and as part of a team. It enables them to identify needs and opportunities and to respond by developing ideas and eventually making products and systems. Through the study of Design and Technology they combine practical skills with an understanding of aesthetic, social and environmental issues, as well as functions and industrial practices. This allows them to reflect on and evaluate present and past design technology, its uses and its impacts. Design and technology helps children to become discriminating and informed consumers and potential innovators.

The aims of design and technology are:

- To develop imaginative thinking in children and to enable them to talk about what they like and dislike when designing and making;
- To enable children to talk about how things work and to draw and model their ideas;
- To encourage children to select appropriate tools and techniques for making a product, whilst following safe procedures;
- To explore attitudes towards the material world and how we live and work in it;
- To develop an understanding of technological processes, products and their manufacture, and their contribution to our society;
- To foster enjoyment, satisfaction and purpose in designing and making.
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In Year 5, the four main **Design and Technology Strands** of Designing, Making, Evaluating and Technical Knowledge will be taught through the **Design and Technology Contexts** of Cooking and Nutrition and Materials.

Design and Technology Contexts:			
A	**Cooking and nutrition**	B	**Materials**
Design and Technology Strands:			
Design		**Make**	
1	• Design innovative, functional and appealing products that are fit for purpose. • Undertake research to inform the design criteria and process. This *may* include surveys and interviews. • Generate, develop and model ideas through the use of annotated prototypes and cross-sectional diagrams. • Generate, develop, model and communicate their ideas through computer aided design where appropriate.	2	• Make a product using textiles and fabrics as the choice of materials. • Select from a range of textiles and fabrics, based on their functional properties and what they look like. • Select from and use a wide range of tools and equipment to cut and join accurately. • Use their understanding of a healthy and varied diet to design their own savoury food product. • Prepare and cook their savoury food product.
Evaluate		**Technical Knowledge**	
3	• Investigate and analyse a range of existing products. • Evaluate their ideas and product against their design criteria. • Consider the views of others and how they could improve their work. • *Where appropriate, consider how significant events and individuals in DT have helped to shape the world.*	4	• Apply their understanding of how to strengthen and reinforce materials. • Understand and apply the principles of a healthy diet.

Sequence of Knowledge for Design & Technology:

Year 6

Aims and objectives:

Design and technology prepares children to take part in the development of tomorrow's changing world. Creative thinking encourages children to make positive changes to their quality of life. The subject encourages children to become autonomous and creative problem solvers, both as individuals and as part of a team. It enables them to identify needs and opportunities and to respond by developing ideas and eventually making products and systems. Through the study of Design and Technology they combine practical skills with an understanding of aesthetic, social and environmental issues, as well as functions and industrial practices. This allows them to reflect on and evaluate present and past design technology, its uses and its impacts. Design and technology helps children to become discriminating and informed consumers and potential innovators.

The aims of design and technology are:

- To develop imaginative thinking in children and to enable them to talk about what they like and dislike when designing and making;
- To enable children to talk about how things work and to draw and model their ideas;
- To encourage children to select appropriate tools and techniques for making a product, whilst following safe procedures; · To explore attitudes towards the material world and how we live and work in it;
- To develop an understanding of technological processes, products and their manufacture, and their contribution to our society;
- To foster enjoyment, satisfaction and purpose in designing and making.

In Year 6, the four main **Design and Technology Strands** of Designing, Making, Evaluating and Technical Knowledge will be taught through the **Design and Technology Contexts** of Cooking and Nutrition and Electrical/Construction.

Design and Technology Contexts:			
A	**Cooking and nutrition**	B	**Electrical/Construction**
Design and Technology Strands:			
Design		**Make**	
1	• Design innovative, functional and appealing products that are fit for purpose. • Undertake research to inform the design criteria and process. This *may* include surveys and interviews. • Use prototypes (and pattern pieces where appropriate), exploded diagrams (that show how products fit together) and computer aided software to represent designs.	2	• Make a product using construction materials. • Select from and use a range of tools and equipment to cut, shape and finish a product (such as sanding wood). • Select from and use a range of construction materials, using their functional properties and what they look like. • Use a series circuit within their product. • Understand the principles of a healthy diet. • Prepare and cook a savoury dish, using seasonal ingredients.
Evaluate		**Technical Knowledge**	
3	• Investigate and analyse a range of existing products. • Evaluate their ideas and product against their design criteria. • Consider the views of others and how they could improve their work. • *Where appropriate, consider how significant events and individuals in DT have helped to shape the world.*	4	• Understand and use electrical systems in their products e.g. include a series circuit with switches, bulbs, buzzers and motors. • Apply their understanding of computing to program, monitor and control their products. • Understand and apply the principles of a healthy diet. • Understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed.