Design and Technology Banks Road Infant and Nursery School

Intent:

At Banks Road Infant and Nursery School we aim to provide an inspiring and exciting Design and Technology (DT) curriculum, which promotes creativity, resourcefulness, and innovative thinking across our school. We want the curriculum to create enquiring and enthusiastic learners who are confident to create an impact and change in today's world. We use our carefully planned progression of knowledge to ensure that DT skills are introduced, practised, developed and embedded during the children's time at Banks Road. We intend to ensure that our young learners have opportunities to practise, develop and use their DT skills in real-world and purposeful contexts while using a range of tools and materials to solve problems, create solutions, make prototypes, and create high-quality products that meet user needs and requirements. While participating in the process we want the children to refine, adapt and evaluate their finished products and learn valuable lessons from the process that they can build on in their future learning and projects.

Diadvantaged/SEND – Pupils with SEN make better progress in DT than most other subjects. A broad spectrum of the DT curriculum is planned and delivered in order to accommodate and challenge pupils of all abilities. The subject of DT helps to develop and enable skills such as communication to be applied by in practical ways. To help pupils to work as independently as they can we offer a variety of methods to record ideas quickly and different of ways of working on tasks to support individual children to use and develop their DT skills.

Implementation:

Our Design and Technology curriculum at Banks Road Infant and Nursery School is designed to inspire our children to be curious, adventurous and imaginative through a sequence of engaging and challenging activities. We ensure that our DT teaching focuses on developing the children' knowledge and understanding of materials, technologies, and design processes and we use a project-based approach that aligns with the Design and Technology Association's recommended methodology, which involves thorough evaluation, prototyping, testing, refining, and re-evaluating. Within our topics we use a range of stimuli, including real-life problems, to help our children develop their problem-solving skills independently and collaboratively. We also ensure that our DT lessons include opportunities for cross-curricular learning to nurture our children's imagination, creativity and ideas, whilst building up their academic and social skills. We teach and encourage our children to communicate effectively and clearly about their ideas, designs and products and to appreciate processes that they work through and the role that their designs and finished products play in everyday life.

Disadvantaged/SEND – We recognise how much children enjoy participating in DT and we consider any barriers to learning so that all children can take part and learn in the same way as their peers. For some activities, a "parallel" activity may need to be provided so that they can work towards the same objectives as their peers but in a different way. It may be necessary to provide specialist equipment, adapt room layouts, utilise support staff and allow additional time for tasks.

Impact:

At Banks Road Infant and Nursery School we recognise that an outstanding Design and Technology curriculum has a considerable impact on our students' learning, development, and progress in their academic journey. Our DT curriculum will promote and encourage curiosity, creativity, and innovation, which will enable our students to take risks, persevere and overcome challenges and progress on to more complex tasks. We ensure that our students develop transferable skills, including problem-solving, communication, teamwork, critical thinking, analysis, and evaluation, which we believe are crucial for their future. Our students build their confidence and resilience as they tackle design projects, manage the design process, and create high-quality products, which will promote their sense of achievement and enhance their motivation to learn more. Additionally, our DT curriculum will foster a positive attitude towards learning, hone fine motor skills and promote environmental awareness. Therefore, the impact of our DT curriculum is transformative, ensuring our students meet lifelong learning goals, develop a design mindset, and develop an enjoyment of the subject of Design Technology and the processes involved.

Design and Technology Banks Road Infant and Nursery School

Disadvantaged/SEND – Designing and making usable products gives pupils a real sense of achievement. They benefit from experiencing their own progress and taking responsibility for their own learning. Children enjoy the practical application of their ideas. Plus, their personal engagement with the task improves attention span, patience, persistence and commitment.

Substantive and disciplinary knowledge

Substantive knowledge in design and technology is based on the knowledge of four key elements of the process of design (design, make, evaluate and technical knowledge). All of these elements will be taught from nursery to Year 6 and vocabulary is taught explicitly and will be deliberately practised and applied through the 4 key elements. Substantive knowledge is the carefully sequenced, factual knowledge that we learn through our curriculum; our life-long learning and other information that we learn alongside this. Substantive knowledge cannot be learnt in isolation, but requires prior knowledge that enables us to make sense of what we have learnt.

Disciplinary knowledge in design and technology is the process of enabling children to use their substantive knowledge of products and materials around them to make links between and across different areas of the curriculum. Disciplinary knowledge is the way in which we learn. In DT we learn through researching, designing, making and evaluating products. Disciplinary knowledge in design and technology will equip the children with the opportunity to think and talk like designers and discover how this substantive knowledge is gained.

Procedural Knowledge in design and technology is the skills and processes needed to create a project, for example, joining two materials together. It is knowing how to perform a task.

Vocabulary is crucial to academic success for our children. Tier 3 vocabulary is mapped out throughout our curriculum in order to ensure progression and ambition.

The understanding of knowledge has been carefully sequenced to build year-on-year. This is clearly outlined in our **progression of knowledge and threads of learning planning.**

Our **Sticky Knowledge** for D&T outlines the key knowledge that we want our children to know and remember from each unit of work. This incorporates key vocabulary, knowledge, key questions and considerations for making and evaluating product**s. Retrieval** is built into every lesson and **spaced retrieval** each term using the learning wall and sticky knowledge books.

In **EYFS**, the children have daily access to a variety of media and materials which they can explore to produce their own D&T creative work. Provision is carefully planned to suit the interests of the children, whilst developing the necessary foundation skills. Through on-going observations of the children, the adults have an in-depth knowledge about each child's development. This ensures that the adults facilitating learning know each child's next steps and can give the children the learning opportunity and experience they need to develop their D&T skills.

Design and Technology Banks Road Infant and Nursery School

Component Plan

Cycle 1 / Cycle 2

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
FS	Teaching and practising scissor skills Application of PVA glue. Modelling clay hedgehogs. Making Police phones. Teaching and practising scissor skills Learning how to apply PVA glue.	Design and colour a mask, cape, gloves for Supertato Making a split Pin Elf – using a braddle/hole punch Modelling clay Diva lamps Box modelling – practising joining materials. Introducing tools and skills for junk modelling. Modelling clay Diva lamps	Making card Slippers Building animal homes. Constructing a Hansel and Gretel house using biscuits and icing. Making porridge with milk. Creating a raft or bridge for the Billy Goats. Designing and making a house for the three little pigs.	Using the DT trolley – sawing wood. talking about safety rules. Sawing dowelling for making a fishing rod. Baking Easter cakes / nests. Making Easter cards.	Design and make a box modelled farm animal Global week – Constructing a famous landmark. Using hole punch / treasury tags to create caterpillars. Constructing a home for a minibeast.	Lifecycling in Forest School Baking biscuits. Designing and making a vehicle. .
Year 1/2	**Structures-Mechanisms-** Joining materials to bulid a Tudor house with a flange – an opening door. **Food and Nutrition-** **B**aking bread. **Structures-Mechanisms-** **-Constructing a c**astle with a working drawbridge	**Textiles-** Sewing Christmas puddings – **Structures-** Year 2 – Using the DT Trolley - Woodwork **Mechanisms:** Exploring Levers and Sliders Textiles – Sewing Christmas decorations	**Food and Nutrition** Making a Wonderwoman wrap **Structures-Mechanisms-** Constructing a Superhero vehicle with axles and wheels. **Structures-Mechanisms-** Building a rocket with tabs and flanges	**Mechanisms: -** Making Mothers Day cards with levers and sliders. **Mechanisms:** Making Mother's Day cards with levers and sliders.	**Textiles-** Designing and creating Teddy Bear capes. **Food and Nutrition** – Making pizzas.	**Structures-Mechanisms-** Making a Worry Box.

Design and Technology Banks Road Infant and Nursery School

Progression of Knowledge and Threads of Learning

	Progression of Knowledge and Threads of Learning			
FS1	**STRUCTURES: FREESTANDING STRUCTURES** **1.**	**2. COOKING AND NUTRITION: PREPARING FRUIT AND VEGETABLES**	**3. MECHANISMS: SLIDERS AND LEVERS**	**4. TEXTILES: TEMPLATES AND JOINING TECHNIQUES**
	Substantive Knowledge Threads: Know the properties of different materials and choose materials for a purpose. Know the purpose of different tools and have an understanding of how to use them safely. Know how to use simple tools, materials and joining methods to join materials. Know that materials can be joined in different ways.	**Substantive Knowledge Threads:** Know that ingredients can change how a food item looks. Know that there are different tools to use with different ingredients and know how to use them. Know how to put ingredients together to make a food item. Know that eating well contributes to good health. Know and name some healthy foods.	**Substantive Knowledge Threads:** Know how mechanical toys work through exploration. Know that parts work together. Know that pieces of equipment fit together, like puzzle pieces. Know how to move equipment so that the design works.	**Substantive Knowledge Threads:** Know that they can use different materials. Know that different materials have different textures. Know how to use their senses to investigate different materials and textures. Know how to join different materials together.
	Disciplinary and Procedural Knowledge Threads: Use found materials and construction materials to build and make. Use simple tools and joining methods. Explore different materials and tools. Select tools for a purpose and use with increasing control.	**Disciplinary and Procedural Knowledge Threads:** Use ingredients and look how they change. Use tools confidently to stir, mix and pour. Identify a healthy food. Use senses to explore foods.	**Disciplinary and Procedural Knowledge Threads:** Explore mechanical equipment such as wind up toys, pulleys, sets of cogs with pegs and boards. Explore different materials and tools. Select tools for a purpose and use with increasing control.	**Disciplinary and Procedural Knowledge Threads:** Investigate different materials and joining techniques. **Use** a range of tools competently, safely and confidently.

Design and Technology Banks Road Infant and Nursery School

FS2	STRUCTURES: FREESTANDING STRUCTURES	COOKING AND NUTRITION: PREPARING FRUIT AND VEGETABLES	MECHANISMS: SLIDERS AND LEVERS	TEXTILES: TEMPLATES AND JOINING TECHNIQUES
	Disciplinary and Procedural Knowledge Threads: Know the qualities of some materials and choose resources for a particular reason. Know the purpose of different tools and how to use them safely. Know that materials can be joined in different ways. Know that there are different tools and techniques to join materials. Know the importance of making improvements to their ideas or models. Know how to work like a designer.	**Disciplinary and Procedural Knowledge Threads:** Know that 'ingredients' means the items in a mixture or recipe. Know that some ingredients can change when you heat or cool them. Know how to heat and cool ingredients. Know how to follow a recipe to make a food item. Know and name some healthy foods. Know where some food comes from.	**Disciplinary and Procedural Knowledge Threads:** Through exploration, know how mechanical toys work. Know that there are different kinds of mechanisms. Know that parts can link together to create a working system. Know how to move equipment so that the design works.	**Disciplinary and Procedural Knowledge Threads:** Know that different materials can be joined together to finish designs. Know how to join materials together using more than one joining technique. Know that a design is linked to a user. Know ways to change colour and texture. Know how to evaluate what a user would need from a design.
	Disciplinary and Procedural Knowledge Threads: Use a range of materials to build and make. Use tools and techniques to join different materials. Use a range of tools including scissors competently, safely and confidently.	**Disciplinary and Procedural Knowledge Threads:** Use ingredients and look how things change when heated or cooled. Use a range of tools competently, safely and confidently to stir, mix, pour and blend. Understand and use food preparation tools, techniques and processes.	**Disciplinary and Procedural Knowledge Threads:** Explore mechanical equipment such as levers, wheels and axles on toys. Use a range of tools competently, safely and confidently. Create collaboratively, sharing ideas, resources and skills.	**Disciplinary and Procedural Knowledge Threads:** Investigate different materials and joining techniques. **Use** a range of tools competently, safely and confidently. Share their creations, explaining the process they have used.

	Create collaboratively, sharing ideas, resources and skills. Share their creations, explaining the process they have used.	Identify healthy foods.	Share their creations, explaining the process they have used.	
YEAR 1	**STRUCTURES: FREESTANDING STRUCTURES**	**COOKING AND NUTRITION: PREPARING FRUIT AND VEGETABLES**	**MECHANISMS: SLIDERS AND LEVERS**	**TEXTILES: TEMPLATES AND JOINING TECHNIQUES**
	Substantive Knowledge Threads: Know that a structure is something that has been made and put together. Know that different structures are used for different purposes. Know that the shape of materials can be changed to improve the strength and stiffness of structures. Know that tools / equipment can be used to cut, shape, join and finish.	**Substantive Knowledge Threads:** Know the difference between fruits and vegetables and that some foods typically known as vegetables are actually fruits (e.g. cucumber). Know that a fruit has seeds and a vegetable does not. Know that fruits grow on trees or vines. Know that vegetables can grow either above or below ground and that vegetables can come from different parts of the plant. Know that food comes from animals or plants. Know that food can be cut, peeled and grated.	**Substantive Knowledge Threads:** Know that a mechanism is the parts of an object that move together. Know that a slider mechanism moves an object from side to side and has a slider, slots, guides and an object. Know that bridges and guides are pieces of card that purposefully restrict the movement of the slider. Know that axles are used in structures and mechanisms to make parts turn in a circle.	**Substantive Knowledge Threads:** Know that there are different textiles and know which are more suited to different projects. Know that textiles can be cut and joined to make a product.

Design and Technology Banks Road Infant and Nursery School

	Disciplinary and Procedural Knowledge Threads: Think of ideas, explain what they want to do and use pictures and words to plan. Make a stable structure by exploring how it can be made stiffer, stronger and more stable. Assemble the components of my structure by using joining techniques such as flange. Evaluate their project and adapt their design.	**Disciplinary and Procedural Knowledge Threads:** Identify if a food is a fruit or a vegetable. Taste and compare fruit and vegetables. Make a fruit and vegetable smoothie; wash, chop and peel with support.	**Disciplinary and Procedural Knowledge Threads:** Explore making mechanisms. Design a moving picture with a slider and/or a lever Construct a moving picture. Evaluate their finished product by saying what has worked well and what could be improved.	**Disciplinary and Procedural Knowledge Threads:** Describe how textiles feel. Measure, cut and join textiles to make a product with some support.
YEAR 2	**STRUCTURES: FREESTANDING STRUCTURES** **1.**	**COOKING AND NUTRITION: PREPARING FRUIT AND VEGETABLES**	**MECHANISMS: SLIDERS AND LEVERS**	**TEXTILES: TEMPLATES AND JOINING TECHNIQUES**
	Substantive Knowledge Threads: Know characteristics of materials and know which are suited to building different structures. Know how to use different tools. Know how to make a product stronger. Know that products serve a purpose. Know that there are strengths and weaknesses of products made. Know that materials can be measured.	**Substantive Knowledge Threads:** Know that 'diet' means the food and drink that a person or animal usually eats. Know what makes a balanced diet. Know that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar. Know where to find the nutritional information on packaging. Know that nutrients are substances in food that all living things need to make energy, grow and develop.	**Substantive Knowledge Threads:** Know that mechanisms are a collection of moving parts that work together as a machine to produce movement. Know that there is always an input and an output in a mechanism. Know that an input is the energy that is used to start something working. Know that an output is the movement that happens as a result of the input.	**Substantive Knowledge Threads:** Know that textiles can be joined to make a product. Know that sewing is a method of joining fabric. Know that different stitches can be used when sewing. Know the importance of tying a knot after sewing the final stitch. Know that a thimble can be used to protect our fingers when sewing.

		Know that I should only have a maximum of five teaspoons of sugar a day to stay healthy. Know that many food and drinks we do not expect to contain sugar do; we call these "hidden sugars." Know where food comes from e.g. above/below ground. Know that food has to be farmed, grown or caught. Know that with safety and good hygiene, food can be cut, peeled and grated.	Know that a lever is something that turns on a pivot. Know that a linkage mechanism is made up of a series of levers.	
	Disciplinary and Procedural Knowledge Threads: Think of ideas, choosing the best materials and tools and giving reasons for this. Describing their design by using pictures, diagrams, models and words. Measure materials to use in a model or structure Describe some different characteristics of materials Join materials and components in different ways Use joining, folding or rolling to make a structure stronger	**Disciplinary and Procedural Knowledge Threads:** Describe the properties of ingredients. Show an understanding that I should eat a range of different foods from each food group, and roughly how much of each food group. Cut, peel and grate with increasing confidence Explain what hygiene is related to food preparation	**Disciplinary and Procedural Knowledge Threads:** To look at objects and understand how they move. Describe how something works. Join materials together as part of a moving product. Explore different design options.	**Disciplinary and Procedural Knowledge Threads:** Measure and cut textiles. Explain why a particular textile was chosen. Sew a running stitch. Join fabrics using a running stitch. Decorate fabrics using a range of techniques.

	Use own ideas to make a structure stronger. Develop their ideas from a starting point. Explain what went well with their work and explain what they would improve if they did the task again.			
Vocabulary	**EYFS:** Choose Colour Ideas Cut Make Try Difficult Don't like Easy Feelings Think Like Use Cutlery Safe Food Fruit Mix Smell Stir Taste Vegetables Tools – scissors, bradawl, saw, hole	**Year 1:** Design(ing) Drawing Labels Model Purpose Template User Appearance Combine Construction materials Decorations Equipment Fabric Finish Join Making Mark out Materials Plan Shaping Tools Change Compare Repeat Axels	**Year 2:** Annotated drawings Appealing Communicate Computing software Creative Design criteria Develop Function Intended user Mock – up Practical Products Purposeful Accuracy Assemble Characteristics Components Finishing techniques Hand tools Manipulate Running stitch Score Textiles Discuss Evaluate	

	punch, hammer, vice, goggles, apron	Build Explore Stiff Strong Animals Caught/chop/farmed Food safety Grate Grown Healthy Ingredients Plants Slice Sort Weigh	Improve Improvements Positive Process Product Refine Stages Strengths Successes Create Levers Mechanisms Sliders Stable Structure Design Eatwell Guide Food groups Hazard Hygiene Juicer Originate Peel Portions Prepare Safe knives Varied diet Zest Zester	

Sticky Knowledge/Retrieval

Sticky knowledge refers to key information that is not only well understood but also easily retained and recalled over time. This concept is crucial as it enhances pupils' ability to apply their knowledge in varied contexts, facilitating deeper comprehension and long-term retention. It incorporates key vocabulary, knowledge, key questions and considerations.

Sticky knowledge combines a variety of methods to support pupils' retention: immediate retrieval, short term memory and spaced retrieval; each method playing a significant part in the children's memory and ability to retain key learning, knowledge and skills.

At Banks Road sticky knowledge tasks are planned thoroughly to ensure appropriate coverage of all wider curriculum subjects and the units and key learning within them.

In Foundation Stage time is set aside at the beginning of each session to focus on previous learning and there are sessions each day to focus on sticky knowledge tasks, primarily through their use of floorbooks and learning journey walls.

In Key Stage One retrieval is built into the start of every lesson and spaced retrieval is planned each half term using the learning walls and daily retrieval discussions.

Assessment Criteria

EYFS	
Design: ➢ **Know the qualities of some materials and choose resources for a particular reason.**	**Make:** ➢ **Use a range of materials to build and make.** ➢ **Know that materials can be joined in different ways,**
Evaluate: ➢ **I can share my creations, explaining the process I have used.**	**Technical Knowledge:** ➢ **I can safely use a variety of materials, tools and techniques.** ➢ **Know that there are different kinds of mechanisms.**
YEAR 1	
Design: ➢ **I can design useful products and use pictures and words to plan.**	**Make:** ➢ **I can use a range of tools for cutting, shaping, joining and finishing.**
Evaluate: ➢ **I can evaluate my project and adapt my design.**	**Technical Knowledge:** ➢ **I can apply my understanding of how to strengthen, stiffen and reinforce more complex structures.**

Design and Technology Banks Road Infant and Nursery School

YEAR 2	
Design: ➢ **I can share my ideas through talking, pictures, diagrams and models.** ➢ **I can explore different design options.**	**Make:** ➢ **I can choose materials that are suitable for a task based on their properties.** ➢ **I can join matrerials and components in different ways.**
Evaluate: ➢ **I can evaluate my ideas and products, say what went well and explain what I would improve if I did the task again.**	**Technical Knowledge:** **I can understand and use mechanical systems in their products – for example,**