Design and Technology in Stanton Bridge Primary Curriculum

Intent

Stanton Bridge Primary School's Curriculum Statement of Intent has been constructed to reflect and incorporate each curriculum subject whilst ensuring that each subsequent content designed meets the intent at every opportunity.

Thus, the context - past, present and future - are factored in. The past - family influences, social experience and how that may contribute to their new experiences. The present – school and expanding social networks, and how this can positively shape their future given the right environmental and social factors. Finally, the future - in search of what awaits them in a fast-evolving technological world.

Hence the premise upon which our pupils will grow:

- High ambition.
- Rich in language with a passion for learning.
- Habits of Mind that serves to support achievement across all areas of learning.
- Strong basis for continuous academic growth beyond their primary years.
- Ability to regulate their social, emotional well-being, with knowledge & skills to tap into a bank of resources that enable them to be flexible in their approach to problem-solving.
- Stand shoulder to shoulder and thrive with others in a range of different roles, exhibiting leadership qualities and skills.
- Acknowledge and appreciate their heritage in world where accepting themselves as individuals and celebrating who they are is key in steering a complex and ever-changing environment.
- Having a voice and knowing that they can make a difference to the world in which they live, changing things for the better.
- Positive relationships and social networks from which they can thrive and excel, seeking and working to include others.
- Belonging to the House of Values, focused on developing character, competence and connectedness. (Aspiration, Respect, Harmony, Independence, Honesty and Confidence)

Character -	Our pupil are taught to learning with a sense of honesty, coming to know, acknowledge and appreciate both strengths and areas for further growth learning. They are then taught to respect the learning ahead of them and to appreciate this opportunity to learn where this is not the case for many across the world.
Competence -	Pupils will have high aspiration for learning, demonstrate confidence in key concepts learned, use subject specific vocabulary, working both independently and interconnected dependent on task set.
Connectedness -	Pupils will work in harmony with others, within familiar and unfamiliar surroundings.

Implementation:

Pedagogy: The understanding of how concepts are taught.

Pedagogy is the 'method of teaching'. At Stanton Bridge, we use the Barak Rosenshine's Principles of Instruction to establish Effective Teaching Practice. This is further strengthened by the use of Thinking Frames that support in the development of Metacognition. Our school's approach to Teaching and Learning is rooted in the Science of Learning and as such, all staff members are routinely engaged in school improvement activities to develop pedagogy and specific CPD to ensure subject content is expertly delivered. This of course sits alongside individualised mentoring and coaching to support continuous improvements in practice. Responsive coaching also serves to ensure each adult knows the relevant next steps to maximise learning opportunities for all groups of pupils.

Core concepts for Design and Technology:

The following core concepts will be taught and delivered throughout the topics: Structures, food and nutrition, mechanisms, textiles, wood work, mechanical systems and electrical systems from Years 1-6.

Core Concepts in Design and Technology			
Design – A plan or drawing produced to show the look and function or workings of a building, garment or other object before it is made.	Technology - Technology is science or knowledge put into practical use to solve problems or invent useful tools.	Make – Forming something by putting parts together or combining substances.	Technical Knowledge – Known facts.
Evaluate – Reviewing products within careful consideration to the value, nature, character or quality of something.	Functionality – The quality of being useful, practical and right for the purpose in which something was made.		

Design and Technology Delivery:

Lesson timings	Type of delivery
Design and Technology is taught half termly for 50 minutes per lesson for KS1 and 60 minutes per lesson for KS2.	The lessons are predominantly discrete to enable focus on the core concepts of design and technology, although vocabulary is continually developed using sentence stems and tiers universally across the subject areas.

Design and Technology Planning – Lesson Structure:

Recap previous learning – Prior knowledge from previous year groups, topics or weeks is revisited and recapped using Blooms Hierarchy of Questioning to encourage deeper level thinking and discussions.
Learning Intention – Learning Outcomes explained, key vocabulary discussed and repeated through MTYT.
Didactic teaching - Teach key concepts – Teacher explains the purpose behind the learning, making explicit links as to why they are learning this particular method and/or skill and how it can be transferred across the curriculum and outside of the lesson. Teacher then teaches the concepts needed for the lesson.
Modelling strategies/methods – Teacher teaches skill or method explicitly, through modelling visually and providing auditory commentary whilst work is being modelled to pupils. Metacognitive strategies are used throughout, such as thinking out loud, to further embed understanding of the process they should follow in order to accurately complete their work and master the skill and/or method taught.
Shared Model – The process is repeated with pupil input.
AFL – Pupils demonstrate understanding – Teachers check through questioning and observation.
Main task independent/pair/groups – Independent/pair/groups - pupils practice and embed new concept/consolidate through scaffolded tasks designed by teacher.
Facilitate learning – Teacher live marks and checks on progress throughout the lesson, intervening and appropriately questioning to check for understanding when necessary, whilst asking higher level questions to encourage children to further their knowledge.
Plenary/Reflection – Teacher and teaching assistant check in throughout the lesson as and when it is most appropriate for the children and lesson taught each week.

Annual Organisation

	Autumn	Spring	Summer
Nursery			
Reception			
Year 1	Topic: Mechanisms Unit: Pop-Up Books Core Concept: Functionality/Design/Make/Evaluate	Topic: Structures Unit: Houses Core Concept: Functionality/Design/Make/Evaluate	Topic: Textiles Unit: Beach Bag Core Concept: Technical Knowledge
Year 2	Topic: Structures Unit: Cathedrals Core Concept: Functionality/Design/Make/Evaluate	Topic: Mechanisms Unit: Fire Engines Core Concept: Functionality/Design/Make/Evaluate	Topic: Food and Nutrition Unit: Healthy Meals Core Concept: Technical Knowledge
Year 3	Topic: Food and Nutrition Unit: Birmingham Balti Core Concept: Technical Knowledge	Topic: Textiles Unit: Greek Clothing Core Concept: Technical Knowledge	Topic: Mechanisms Unit: Dinosaur Animation Core Concept: Functionality/Design/Make/Evaluate
Year 4	Topic: Structures Unit: The Colosseum Core Concept: Functionality/Design/Make/Evaluate	Topic: Structures – Wood Work Unit: Viking Longboats Core Concept: Functionality/Design/Make/Evaluate	Topic: Electrical Systems Unit: Buzz Game Core Concept: Design/Make/Evaluate
Year 5	Topic: Food and Nutrition Unit: French and Romanian Restaurant Core Concept: Technical Knowledge	Topic: Electrical Systems Unit: Space Buggy Core Concept: Design/Make/Evaluate	Topic: Mechanical Systems Unit: Trebuchets Core Concept: Functionality/Design/Make/Evaluate
Year 6	Topic: Food and Nutrition Unit: Overnight Oats Core Concept: Technical Knowledge	Topic: Textiles Unit: Applique Core Concept: Technical Knowledge	

Impact

The ultimate test of the impact of the curriculum is in whether the students know what you want them to know, and what you think they should know. This has been carefully mapped against the core concepts for design & technology in the tables on the following pages. To determine this, we check and monitor children's learning, providing teachers and students with information about progress and analysis of deliberate retrieval practice. We need to be able to fluidly use 'checking for understanding' techniques in the moment as well as being able to know what has been learnt and retained over time and the depth of that learning:

- We use checking for understanding techniques through Socrative quizzes and hinge questions to ensure we are aware of all students learning during the lesson and adapt the pace as necessary.
- Retrieval practice is built in where most impactful to interrupt the forgetting curve and secure constructs in long term memory.
- Depth of knowledge is then assessed through spaced quizzing, end of unit assessment quizzes and pupil Portfolios Showbie.

Design & Technology Specific Impact Measures

In Design & Technology, quizzing is used as a method of assessing pupils, understanding at the end of a core concept to analyse the extent to which knowledge has been consolidated into long-term memory. Retrieval practice tasks throughout the lessons also interrupt the forgetting curve to enable faster access to prior learning.

Progression Points against the Core Concepts

Core Concept	KS1	LKS2	UKS2
Design	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. 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 mockups.	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. Model their ideas using prototypes and pattern pieces. Gather information about the needs and wants of particular individuals and groups. Develop their own design criteria and use these to inform their ideas. Generate realistic ideas, focusing on the needs of the user. Make design decisions that take account of the availability of resources.	Identify the needs, wants, preferences and values of particular individuals and groups. Develop a simple design specification to guide their thinking. Generate innovative ideas, drawing on research. Make design decisions, taking account of constraints such as time, resources and cost.
Make	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. 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.	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. Use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components. Follow procedures for safety and hygiene. Order the main stages of making.	Produce appropriate lists of tools, equipment and materials that they need. Formulate step-by-step plans as a guide to making. 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.
Technical Knowledge	Pupils should 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.	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 simple electrical circuits and components can be used to create functional products. That a single fabric shape can be used to make a 3D textiles product.	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 reinforce and strengthen a 3D

	- The correct technical vocabulary for the projects they are undertaking.	That food ingredients can be fresh, pre-cooked and processed.	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.
Evaluate	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. Pupils should 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.	Identify the strengths and areas for development in their ideas and products. Consider the views of others, including intended users, to improve their work. 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.	
		Refer to their design criteria as they design and make. Use their design criteria to evaluate their completed products. Pupils should 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.	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. Pupils should 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.