Design & Technology in the OCL Primary Curriculum

Intent

The OCL Curriculum Statement of Intent has been carefully considered for each curriculum area to ensure the content designed meets this at every opportunity.

The context that our children and young people live in:

- Our children live in a world where they require the skills and qualifications, flexibility, emotional intelligence and expertise to be leaders and to thrive as human beings.
- Our children live in a world where accepting themselves as individuals and celebrating who they are is key in navigating a complex and ever-changing environment.
- Our children live in a world where they need to feel a sense of ability to change things for the better and have self-efficacy.
- Our children live in a world where they need a network of relationships and a network of support to thrive and excel.
- Our children live in a world where early development of vocabulary skills is the single most important factor to get right as early as possible.

We want our children and young people to:

- Be inspired to improve the world around them.
- Have the ambition, skills and expertise to thrive in a fast changing, interconnected and communication rich world, with the confidence and technical expertise to thrive.
- Have a network that supports them.
- Be comfortable in who they are and able to continuously explore who they are becoming.
- Be rich in language with a passion for learning.
- Seek to include others, be other-centred and celebrate difference.
- Have a values approach to life and a sense of what is right and wrong through the lived experience of the 9 habits.

Therefore, we focus on developing character, competence and community. The Design &Technology curriculum specifically meets the OCL statement of intent by focussing on character, competence and community in the following areas:

OCL PRIMARY CURRICULUM DESIGN TECHNOLOGY	**Character:** To be self-confident, motivated problem solvers inspired by engineers, designers, chefs and architects with the drive to change our world and perspectives
	Competence: Design Technology develops critical thinking and problem-solving skills that are applied to real life contexts. We strive to empower our pupils to become competent problem solvers able to use the language, technical knowledge and understanding of the processes of design to solve real life problems
	Community: Design Technology is all around us. The skills developed will enable our pupils to play an active part in the world giving insight into the worlds of textiles, electronics, mechanics, structures, food production and design whilst understanding how key events and individual have helped to shape our global world

Implementation

To ensure our intent transfers into everyday classroom practice, we use current research in cognitive science to develop pedagogy and specific CPD to ensure subject content is expertly delivered. This is alongside individualised coaching in constantly striving to continually improve practice. Responsive feedback approaches, delivered through out highly effective one-to-one horizons approach, ensure each adult knows the relevant next steps to maximise learning opportunities.

Using research from Dan Williamson's Models of Memory, Sweller's Cognitive Load Theory, Rosenshine's Principles of Instruction and the thinking behind Ebbinghaus' Forgetting Curve, the curriculum is implemented effectively through a set of core concepts, developed for each curriculum area. This enables children to assimilate new information into growing schema as they move through the academy. By presenting new information to students as another example of these core concepts it allows them to process information in relation to previously learned knowledge and make connections.

The core concepts for Design &Technology:

Core Concepts in Design &Technology				
Designing and Planning **Design and Planning**	Making and Producing **Making and Producing**	Evaluating and Testing **Evaluating & Testing**	Technical Knowledge **Technical Knowledge**	Cooking and nutrition **Cooking and Nutrition**

The curriculum is mapped using these core concepts. We plan for progression using the key points outlined in the impact section below. Lesson content is planned towards these progression points and follows the model of direct instruction, shared and modelled practice before culminating in independent practice and mastery. Specific knowledge is acquired through the knowledge organisers in each curriculum area and unit of study to ensure broad and balanced coverage and as a tool for children to add to, revise and structure that knowledge.

Subject Delivery

Lesson Timings	Type of delivery
Design &Technology is taught through the Thematic curriculum with 3 hours per half term, delivered in th first three weeks.	Thematic – D&T is woven into the fabric of the themed weeks allowing pupils to demonstrate their knowledge and understanding by enabling extended design projects resulting in a final product.

Theme	Design Technology
Autumn 1: Who am I and who am I becoming?	Substantive knowledge of structures and how they can be stiffened and strengthened is taught. Pupils will apply this knowledge to design structures to be included in their local area. Pupils will follow the design process and develop design skills through the subject character Daya the Designer.
Autumn 2: Citizenship and the World	Technical Knowledge of mechanism including pulleys, axles, wheel, levers and linkages is taught. Pupils will explore these through historical contexts linking to the History curriculum designing, making, testing and evaluating products.
Spring 1: Heritage and culture	Pupils explore and develop computer aided design skills through the TinkerCAD software platform. Pupils will develop computer designed solutions to a problem of their year groups historical context linking learning to the History curriculum.
Spring 2: Building a sustainable world	Linking to the Geography focus of the Global Goal pupils will follow the design process to design, make, test and evaluate solutions to real world problems that can help meet the Global Goals focus for each year group.
Summer 1: Building an inclusive world	Pupils will design and create inventive ways to raise awareness of equality and spread a message of inclusion through different technical knowledge domains.
Summer 2: Showasis	Pupils will explore food and nutrition through their Oasis Global Linked Country. Pupils will learn about food production and nutrition and apply this to design ing and cooking their own recipes.

Annual Organisation per year group

Thematic Teaching

Term	Theme	Subject Focus	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Autumn 1	Who am I and who am I becoming?	Structures	**Structures** Local Beam Bridges	**Structures** Small Town Design	**Structures** City Design and Structures	**Structures** Suspension Bridges	**Structures** Truss Bridges	**Structures** Earthquake Simulator
Autumn 2	Citizenship and the World	Mechanisms	**Mechanisms** Simple Toy Making	**Mechanisms** Victorian Moving Picture Book	**Mechanisms** Egyptian Pyramid Builder	**Mechanisms** Catapult Cars	**Mechanisms** Viking Automata	**Mechanisms** Motorised Cars
Spring 1	Heritage and culture	Computer Aided Design	**TinkerCAD** Royal Crown Design	**TinkerCAD** Water squirter Design	**TinkerCAD** Mammoth catching Device	**TinkerCAD** Roman Helmet Design	**TinkerCAD** Jeweller Design	**TinkerCAD** Gas Mask Design

Spring 2	Building a Sustainable World	Electrical Components/ CAD	**Textiles** Cape Design	**Textiles** Sewing Pouches	**TinkerCad** – removing plastic from the ocean devices	**TinkerCAD** Biomes	**Electrical Components** Renewable Energy – Hydro Power	**Electrical Components** Solar Power Tinker CAD - Strawbees
Summer 1	Building an Inclusive World	Structures Electrical Components, Mechanisms	**Textiles** War patches design	**Structure** Lego Stadium Design	**Mechanisms/ Structure** Lego Para Olympic Sports	**Electrical Components** Civil Rights Posters - Microbits	**Textiles** Suffragettes Textiles	**Mechanisms** Pnuematic Dragon Heads
Summer 2	Performance	Cooking and Nutrition	**Cooking** Oasis Global Area: South Africa	**Cooking** Oasis Global Area: India	**Cooking** Oasis Global Area: France/Spain/ Germany	**Cooking** Oasis Global Area: Uganda	**Cooking** Oasis Global Area: USA	**Cooking** Oasis Global Area: Brazil

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 Student Portfolios in 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. Pop tasks at the end of the themes pull together the learning for the subject under the core concept areas to consolidate learning and to prepare children to make links to the future learning in subsequent years.

Progression Points against the Core Concepts

Core concept	End point
Making and Producing Making and Producing	Build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users. Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.
Designing and Planning Design and Planning	Pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes and computer-aided design. Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at individuals or groups.
Technical Knowledge Technical Knowledge	Pupils acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Understand how key events and individuals in design and technology have helped shape the world.
Testing and Evaluating	

Evaluating & Testing	Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. Critique, evaluate and test their ideas and products and the work of others. Investigate and analyse a range of existing products. Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.
Cooking and Nutrition Cooking and Nutrition	Understand and apply the principles of nutrition and learn how to cook a range of sweet and savoury dishes that have been carefully sourced and prepared taking into account healthy eating and sustainability.