Design and Technology
INTENT - to what do we aspire for our children?

'Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, 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. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. 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. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.'

Source: National Curriculum (updated Jan 2021)

At HPPS Design and Technology develops the school's 4 key drivers in the following ways:

Excellence

- Inspire pupils to be innovative and creative thinkers who develop an appreciation of the product design cycle through ideation, creation and evaluation
- learn about the designed and made world and how things work; learn to design and make functional products for particular purposes and users.
- Pupils take risks and develop confidence through drafting design concepts, modelling, testing and to be reflective learners who respectfully evaluate their work and the work of others
- Participate in focused practical tasks in which children develop particular aspects of knowledge and skills

Equity

We believe that all children regardless of need will engage in a curriculum that will enable them to become young designers;

- Spiral curriculum with key knowledge made explicit and building complexity over time
- Explicit scaffolding of oracy
- Knowledge organisers used to reduce split attention effect
- Explicit teaching of tier 2 and subject specific vocabulary
- Make reasonable adaptations to D&T lessons and resources
- Ensure that young designers use a range of techniques, learn about a diverse range of designers, engineers and design movements

Character

- To nurture creativity in the design process and develop a personal style
- Use empathy to design a brief for others; understanding that design can be life changing
- Value nutritional knowledge and cooking knowledge as essential life skills; leave HPPS with at least 5 healthy recipes to use at home
- Make informed and respectful evaluations of their own and others' products in order to change and advance their design

Community

- Explore the design and made world in which we all live and work
- Appreciate the made and designed world in their homes and locality; from domestic product design, food design to British aerospace

Aims of the Design and Technology Curriculum

- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- 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
- critique, evaluate and test their ideas and products and the work of others
- understand and apply the principles of nutrition and learn basic essential cooking skills
- articulate their understanding of themselves as designers and their process of designing

Long term Sequence

It is our intention that pupils become a little more expert as they progress through the curriculum, accumulating and connecting substantive and disciplinary design and technology knowledge. Our curriculum follows the principles of instruction, is guided by

understanding how the memory works and cognitive load theory.
Our curriculum starts in EYFS and that is outlined below:

What is the National Curriculum subject content that is supported by the EYFS provision and practice? Art and Design

Art, craft and design embody some of the highest forms of human creativity. A high-quality art and design education should engage, inspire and challenge pupils, equipping them with the knowledge and skills to experiment, invent and create their own works of art, craft and design. As pupils progress, they should be able to think critically and develop a more rigorous understanding of art and design. They should also know how art and design both reflect and shape our history, and contribute to the culture, creativity and wealth of our nation.
Pupils should be taught:

- *to use a range of materials creatively to design and make products*
- *to use drawing, painting and sculpture to develop and share their ideas, experiences and imagination*
- *to develop a wide range of art and design techniques in using colour, pattern, texture, line, shape, form and space*
- *about the work of a range of artists, craft makers and designers, describing the differences and similarities between different practices and disciplines, and making links to their own work*

Play and exploration experiences that support the foundational knowledge and skills for the subject.

Continuous provision play experiences with provocations to enhance Art and Design.	Core books that link to foundational experiences and knowledge.	Possible adult planned experiences and contexts for interactions that support thinking about Art and Design	Key vocabulary that might be introduced and practised in interactions in play/activities.
• Colour mixing; primary colours and secondary. • Child -led activities.	**Art inspired by the books we are reading** **Nursery;** Term 1; Mouse Paint Term 2; Goldilocks and the three bears Term 3; Dear Zoo Term 4; Hungry Caterpillar Term 5; Polar bear, polar bear Term 6; The best loved bear **Reception;** Term 1; Colour Monster Term 2; Stanley's Stick Term 3; The Tiger who came to tea Term 4; Jack and the beanstalk Term 5; Handa's surprise Term 6; Peepo **Artist/illustrator of the term in Reception.** Term 1 colour mixing Sir Frank Bowling Term 2 transient/land art Andy Goldsworthy Term 3 tigers Rousseau Term 4 Term 5 Lubaina Himid - cut out people/life size figures. Term 6 - look at illustrations in books. What did illustrations look like in the past?	• Drawing self -portraits • Drawing and painting pictures of their family. • Transient/land art – Art without Glue using a variety of resources both natural and man -made. Inspired by Autumn. • Art work inspired by books. • Designing and creating a house for an animal. Adapting work where necessary. • Leaf man link – Creating their own pictures using Autumn leaves. • Exploring a range of media throughout the year – pens, pencils, crayons, pastels, poster paint, watercolours, brusho inks, wool, material etc...to name some. • Outdoor art using a range of mark making materials such as paint rollers and different sized brushes on a large scale. (Weekly Forest school sessions in Reception) • Craft Area enables children to self -select resources that they need / want to test out including masking tape and glue to	

Year group	Cooking and nutrition	Mechanisms	Structures	Textiles	Electrical systems	Digital world *New*
	Aside from Electrical systems and Digital world, which is KS2 only, each of these acts as the focus for a unit within each year group					
1	Fruit and vegetables Smoothie	Moving storybook Wheels and axles	Windmills	Puppets		
2	A balanced diet	Moving monsters Ferris wheels	Baby bear's chair	Pouches		
3	Eating seasonally	Pneumatic toys	Castles	Cushions	Static electricity	Electronic charm
4	Adapting a recipe	Slingshot cars	Pavilions	Fastenings	Torches	Mindful moments timer
5	What could be healthier?	Pop-up books	Bridges	Stuffed toys	Electric greetings cards	Monitoring devices
6	Come dine with me	Automata toys	Playgrounds	Waistcoats	Steady hand games	Navigating the world

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 1	Moving story book	Windmills	Smoothies	Wheels and Axles	Puppets	Personal project
Year 2	Making a pouch	Making a moving monster	Baby Bear's Chair	Fairground Wheel	A Balanced Diet	Personal project
Year 3	Cushions	Static Electricity	Pneumatic Toy	Eating Seasonally	Constructing a Castle	Personal Project
Year 4	Adapting a Recipe	Torches	Slingshot Car	Pavilions	Fastenings	Electronic Charms
Year 5	What Could Be Healthier?	Electrical Greeting Cards	Stuffed Toy	Bridges	Eating Seasonally	Pop Up Books
Year 6	Playgrounds	Automata	Come Dine with Me	Steady Hands Game	Waistcoats	Eating Seasonally

A full curriculum overview can be found here.

Knowledge organisers are used for each unit. Summary of the main reasons for use below:

- Conveys the core knowledge in one place
- A reference point for pupils and teachers
- Used to support questioning and retrieval
- Used in books to support participation
- Highlights key vocabulary
- Reduces split attention effect

An example of a KS1 Knowledge Organiser can be found here
An example of a KS2 Knowledge Organiser can be found here

Disciplinary Knowledge

There are 4 core strands run through each unit (with cooking and nutrition as the focus on one unit per year) giving children an opportunity to revisit and deepen their understanding of these across the curriculum.

- Design
- Make
- Evaluate
- Technological Knowledge
- Cooking and nutrition

An overview of the progression of skills.
Sequence of vocabulary progression
An example of the progression in the core strand of design can be found below:

Kapow Primary Strands:		Key stage 1		Key stage 2			
		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design Make Evaluation Technical knowledge	Structures	• Learning the importance of a clear design criteria • Including individual preferences and requirements in a design	• Generating and communicating ideas using sketching and modelling • Learning about different types of structures, found in the natural world and in everyday objects	• Designing a castle with key features to appeal to a specific person/purpose • Drawing and labelling a castle design using 2D shapes, labelling: -the 3D shapes that will create the features - materials need and colours • Designing and/or decorating a castle tower on CAD software	• Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect • Building frame structures designed to support weight	• Designing a stable structure that is able to support weight • Creating frame structure with focus on triangulation	• Designing a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs
	Mechanisms/ Mechanical systems	• Explaining how to adapt mechanisms, using bridges or guides to control the movement • Designing a moving story book for a given audience • Designing a vehicle that includes wheels, axles and axle holders, which will allow the wheels to move • Creating clearly labelled drawings which illustrate movement	• Creating a class design criteria for a moving monster • Designing a moving monster for a specific audience in accordance with a design criteria • Selecting a suitable linkage system to produce the desired motions • Designing a wheel Selecting appropriate materials based on their properties	• Designing a toy which uses a pneumatic system • Developing design criteria from a design brief • Generating ideas using thumbnail sketches and exploded diagrams • Learning that different types of drawings are used in design to explain ideas clearly	• Designing a shape that reduces air resistance • Drawing a net to create a structure from • Choosing shapes that increase or decrease speed as a result of air resistance • Personalising a design	• Designing a pop-up book which uses a mixture of structures and mechanisms • Naming each mechanism, input and output accurately • Storyboarding ideas for a book	•Experimenting with a range of cams, creating a design for an automata toy based on a choice of cam to create a desired movement • Understanding how linkages change the direction of a force • Making things move at the same time • Understanding and drawing cross-sectional diagrams to show the inner-workings of the automata

IMPLEMENTATION - how will we deliver the curriculum?

Linking Curriculum and Pedagogy

Our design and technology curriculum is taught across each year in modules that enable pupils to study in depth key skills and vocabulary and demonstrate their understanding. Each module builds upon prior learning and these are strategically planned throughout the academic year with opportunities to introduce and revisit key concepts in order to deepen pupil understanding and embed learning.

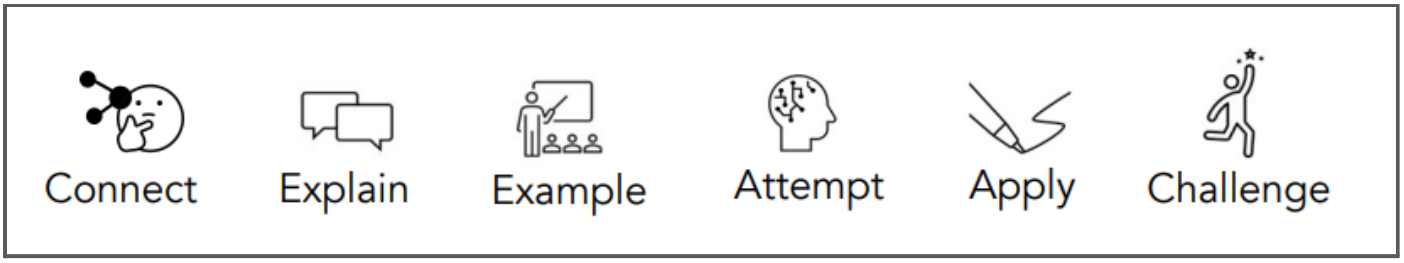
Design Technology is taught across each year group in double modules every week for 3 weeks a term before swapping with Art and Design. Each module aims to activate and build on prior learning, including EYFS, to ensure better cognition and retention. Each module is carefully sequenced to allow for prior learning to be built upon and skills to be practiced and advanced.

Week 1		Week 2		Week 3	
PE	Geography	PE	History	PE	Computing
Music	RE	Music	RE	Music	RE
Geography	PE	History	PE	Computing	PE
Art	Art	Art	Art	Art	Art
Maths	Geography	Maths	History	Maths	Computing

Week 4		Week 5		Week 6	
PE	Geography	PE	History	PE	Computing
Music	RE	Music	RE	Music	RE
Geography	PE	History	PE	Computing	PE
DT	DT	DT	DT	DT	DT
Maths	Geography	Maths	History	Maths	Computing

CATHEDRAL SCHOOLS TRUST | HEADLEY PARK PRIMARY SCHOOL

Lesson design:



Each lesson follows the model above.

- CONNECT to prior knowledge
- EXPLAIN new content
- give and EXAMPLE of new learning
- Pupils ATTEMPT new learning with scaffolding
- APPLY new learning independently
- Pupils are CHALLENGED to integrate learning with prior knowledge

Every lesson will include most or all of the following depending on where they are in the design cycle. (bold in every lesson)

- **Explicit teaching of and recapping of vocabulary**
- **Recap on prior knowledge**
- Stimulus or evaluating existing products
- **Children using individual sketchbooks to chart the design cycle**
- **Knowledge organisers used to support key knowledge and vocabulary**
- Focussed practical task with modelling
- **Opportunities for discussion and purposeful talk**
- **Excellence in effort, technique and outcome highlighted and celebrated**
- **Respectful and knowledgeable use of materials**

We aim to **enrich the curriculum** with educational trips, visitors and links with local creative industries i.e.

- Square Food Foundation
- Cooking Club
- Visits to M Shed/Suspension Bridge/Pizza restaurant
- Use of outside and remote experts
- Use of school ceramic kiln
- Annual entry to Primary Engineer competition

IMPACT - how do we know our curriculum is effective?

Pupil Voice

- Uses design and technology specific vocabulary and terminology
- talk about design and technology specific concepts & knowledge
- talk about the 'why' behind the learning
- explain how learning builds on previous knowledge
- talk about their progress regardless of starting points

High quality outcomes: Book study of pupils' sketchbooks…

- demonstrates pride and effort
- captures increasing understanding of art and design concepts and knowledge
- demonstrates a clear sequence of learning
- vocabulary used correctly where appropriate
- demonstrates that learners are thinking artistically

Art & DT instagram

Art & Design imovie - a termly round up of the creative successeses/celebration of learning

The school environment represents and reflects the successes of the curriculum

CATHEDRAL SCHOOLS TRUST

HEADLEY PARK PRIMARY SCHOOL