

Practice Guidance for Design and Technology

Why is Design and Technology important to the children in our school?

At Cavendish Close we believe that every child has an entitlement to a broad experience of Design and Technology. It gives children opportunities to be creative and practical, and acting as individuals or as part of a team. We provide meaningful opportunities to make products, within a range of contexts, motivating children to be problem-solvers, take risks, be innovative and resourceful.

We recognise the important role of Design and Technology in preparing our children for the real world, developing important life skills which enable them to be positive, capable and active learners, leaders and citizens. The children build their knowledge and skills to 'Reach for the Stars' and feel inspired to become engineers, sculptors, designers, chefs and architects.

The Design and Technology subject also builds layers of learning within other disciplines such as Science, Computing, Engineering, Art and Maths, and therefore nurtures progression across the curriculums. We support our children to use critical thinking and recognise the impact that Design and Technology has on all our lives and the wider world, now and in the past. Through the process of Design and Technology children consider their own and other's needs, wants and values as they work to design and make relevant products.

The modern world is becoming increasingly technological, and this subject facilitates building and applying a repertoire of knowledge and skills. It also cultivates growth mindset and leads them to be confident, reflective, confidently making choices, and learning from mistakes. They are also developing communication skills through discussion, drawing, imagination, team work.

Children also begin to understand and apply the principles of nutrition; learning how to cook and raise awareness of where food comes from, provoking a healthy outlook and care for their bodies and wellbeing.

What is Design and Technology?

Design and Technology principles are in two strands: designing and making, and cooking and nutrition.

The design formula that underpins all Design and Technology based projects is to design and create 'Something for Somebody, for Some purpose'. As a starting point to every Design and Technology activity children are presented with, or self-identify, an open-ended design problem or opportunity. The children are then guided to consider the user/s for their product, from a broad range of contexts (which can be imaginary or story-based), and then think about what their specific requirements, needs, wants and values are.

Design and Technology opportunities:

- Pupils' learning is connected, with Design, Make, Evaluate and Technical Knowledge consistently, coherently and meaningfully rooted in every task.
- When designing children ensure their products are purposeful, functional, appealing, as being clear on how they will work and whether they will be liked by intended users.
- Children identify a definitive design criteria to inform their evaluation processes throughout the designing and making process.
- Pupils are taught a range of ways to develop their ideas, such as: talking, drawing, templates, mock-ups.
- Information and communication technologies are incorporated into the design process such as using a basic paint program to draw initial designs.
- Children have ample opportunities for making choices and decisions, such as selecting from a range of tools, equipment and materials, which will drive the direction of their project.
- A range of tools and equipment are provided to enable the children to match the fine motor skills of all pupils and enable the projects scheduled in the long-term plan to be carried out successfully.
- The children have opportunities to explore and evaluate, through handling collections of existing products related to their projects. These provide a platform for discussion and asking questions such as who the products are for, what they are for and how they work.
- When building structures, in EYFS/ KS1 they should be predominantly freestanding, including walls, towers and frameworks. Through exploring and assembling they should learn how to make structures stronger, stiffer and more stable.
- Children explore and use mechanisms to ensure they are ready to progress into the next key stage, such as 'wheels and axles', and 'levers and sliders'.
- Cooking and nutrition is taught as part of 'designing and making', which indicates knowledge, skills and understanding that underpin high quality designing and making with food. When working with food we use a range of domestic, local and industrial contexts appropriate to pupils' ages, for example health, home, garden,

leisure, culture, food industry and agriculture. The children know the basic principles such naming and sorting foods into the five groups from The Eatwell plate model. They are taught that a healthy diet comprises food and drinks from the food groups and that everyone should eat at least five portions of fruit and vegetables every day. In EYFS/ KS1 children prepare and make a range of simple dishes without a heat source e.g. dips, salads, sandwiches and fruit kebabs/salads. The pupils understand where food comes from, plants or animals, and that food has to be farmed, grown elsewhere (e.g. at home) or caught.

Cavendish Close Intent Statement:

Cavendish Close Infant and Nursery School	
Our STAR Curriculum for Design and Technology	
Early Years Foundation Stage: Specific Area of Learning: Expressive Arts and Design	
Our Intent for Design and Technology	
At Cavendish Close Infant and Nursery School, our children will develop as Designers <u>and</u> Engineers in a range of learning experiences that are underpinned by our key intentions for learning in Design and Technology.	
Our intention is for our children to:	
1	Master our 10 Learning Values .
2	Use creativity and imagination to make design decisions using problem-solving skills; making something for someone for some purpose, enabling them to explore and play with a wide range of media and materials.
3	Make cross curricula links - draw on STEAM disciplines such as, science, engineering, computing, <u>art</u> and mathematics.
4	Acquire a broad range of subject knowledge, learning how to take risks, becoming resourceful, innovative, enterprising and capable citizens .
5	Develop a critical understanding and practical expertise of Design and Technology's impact on daily life and the wider world and learn about the work of a range of designers describing the difference/ similarity between different practises and making links to their own work.
6	Build and apply skills in designing, making, evaluating .
7	Experience all the essential DT elements: mechanisms, structures, food technology, and textiles
8	Design and make authentic products with functionality and purpose using a range of materials
9	Have opportunities to research, explore and work in a range of relevant contexts including the local community, industry, and the wider environment, to develop the ability to understand and interpret the world around them.
10	Build knowledge as set out in our Design and Technology Curriculum.
11	Build vocabulary as set out in our Design and Technology Curriculum.
12	Use our enabling environment to support our Art and Design Curriculum. This includes: → 'Creative Workshops' and 'Technology Zones' in classrooms
13	Enjoy reading high quality books to support learning in Design and Technology.

Expressive Arts and Design

ELG: Creating with Materials

Children at the expected level of development will:

- Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function;
- Share their creations, explaining the process they have used;
- Make use of props and materials when role playing characters in narratives and stories.

ELG: Physical Development

Children at the expected level of development will:

- Use a range of small tools, including scissors, paint brushes and cutlery;

The content of Design and Technology teaching and learning is set out in the 2014 National Curriculum for primary schools in England:

The national curriculum for design and technology aims to ensure that all pupils:

- 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 how to cook.

Our approach to planning Art and Design:

Design and Technology is planned as part of year group topics and through cross-curricular activities following EYFS and National Curriculum guidelines as set out in our STAR curriculum and intent for Design and Technology (see appendices).

Long term plans provide an overview of the Design and Technology golden thread throughout the year, which are carefully planned to provide a broad range of meaningful opportunities, with clear curriculum mapping and sequential progression.

Objectives are included in medium term topic planning. Individual Design and Technology lessons are planned in detail in a whole class format as part of weekly topic planning. Design and Technology is taught using a Mastery approach with a 'Learning Without Limits' strategy. Design and Technology is planned:

-Longer half-term projects where learning, knowledge and skills are built on each week. This approach enables our children to make meaningful links and connections in their learning and to build on and embed their prior learning over a period of time. These are planned in a 'Project on a page' format, which outline aspect of Design and Technology, key learning, identifies user, links to topics, context, purpose, vocabulary, resources etc.

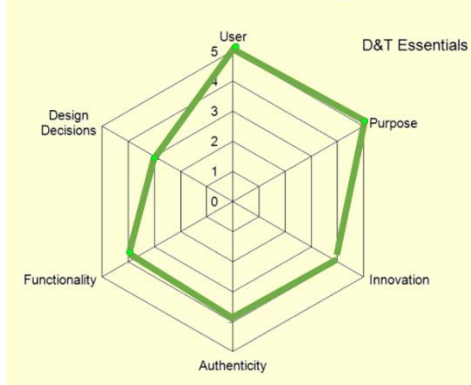
- Short activities linked to topics or events- that have real life contexts such as 'Easter or Chinese New Year' extend the Design and Technology content.

-In provision. Design and Technology links in provision are planned to enhance learning and provide opportunities for self-exploration by posing questions and investigation pointers on the 'Choice Board'. These opportunities provide a platform for the children to explore new or previous key concepts, techniques and materials. For example prompts are supplied with an open ended approach such as "I wonder how I can make a model of a tree" "I wonder which way is the best to join these materials".

Design and Technology is also planned for through homework challenges and half-termly in class showcases.

Design and technology projects are planned to include, to a greater or lesser degree, **all** of the principles listed below. This enables staff to discuss and evaluate medium and short-term planning in design and technology to ensure that children's learning is genuinely design and technological in nature. Here is an example of the model from 'Project on a Page' planning:

20. Overall potential of project



- User - Pupils should have a clear idea of who they are designing and making products for, considering their needs, wants, values, interests and preferences. The intended users could be themselves or others, an imaginary or story-based character, a client, a consumer or a specific target group.
- Purpose - Pupils should be able to clearly communicate the purpose of the products they are designing and making. Each product they create should be designed to perform one or more defined tasks. Pupils' products should be evaluated through use.
- Functionality - Pupils should design and make products that work/function effectively in order to fulfil users' needs, wants and purposes. In Design and Technology, it is insufficient for children to design and make products which are purely aesthetic.
- Design Decisions - Pupils need opportunities to make their own design decisions. Making design decisions allows pupils to demonstrate their creative, technical and practical expertise, and use learning from other subjects. When making design decisions pupils decide on the form their product will take, how their product will work, what task or tasks it will perform and who the product will be for.
- Innovation - When designing and making, pupils need some scope to be original with their thinking. Projects that encourage innovation lead to a range of design ideas and products being developed and are characterised by engaging open-ended starting points for learning.
- Authenticity - Pupils should design and make products that are believable, real and meaningful to themselves and others.

In addition to securing the Design and Technology principles, it is important to check that other key aspects of teaching and learning are in place e.g. the development of knowledge, understanding and skills through the evaluation of existing products and focused tasks.

The Cavendish Close curriculum provides steps for progression in children's knowledge, understanding and skills, where its main aim is to help teachers plan activities which build on pupils' previous learning and ensure an appropriate level of challenge. In EYFS the Design and Technology framework is based on the Department for Education Educational Programme (Statutory Guidance) and Development Matters (Non-statutory).

In Key stage 1 these include, but go beyond, the new National Curriculum programmes of study, to include Design and Technology integral elements: designing, making, evaluating, technical knowledge and understanding, and cooking and nutrition elements.

Aspects of D&T:

- Mechanisms: Sliders and levers
- Mechanisms: Wheels and axles
- Structures: Freestanding structures
- Food: Preparing fruit and vegetables (including cooking and nutrition requirements for KS1)
- Textiles: Templates and joining techniques
- Cavendish: Close cutting and joining skills progression plan and 'Success with Scissors'

Progression

An underlying principle of our Framework is that pupils' learning is developed cumulatively. This means that learning from previous year groups is revisited in teachers' planning and practice and used in a more sophisticated way in subsequent years. This can be seen in the Design and Technology overview from EYFS to Year 2, as well as the cutting and joining skills map in the progression document and the 'Success with Scissors' assessment tool (see appendices).

Essential resources for Design and Technology:

Every classroom has a designated 'Creative Workshop' equipped with a range of tools and materials easily accessible to children. These areas have supportive materials such as vocabulary, and knowledge mats, as well as relevant Design and Technology language and techniques on display.

Our design resources are organised with regular stock takes to ensure the correct tools and equipment are available. Tool boxes for different techniques can be checked out by staff, for example the 'sewing box'.

Every child in the school has a Sketchbook which they are encouraged to take full ownership of, and this is where the children record their drawings, designs, annotations and research.

We invest in quality materials and tools that support the children in their learning. We use other resources such as design practitioner lead sessions, and visitors to enhance our cultural capital and Design and Technology offer.

Each classroom has Ipads with access to J2E app which provides opportunities to develop digital creative skills.

See appendices for detailed audit of design resources.

Our approach to teaching and learning in Design and Technology:

Design and Technology is taught across the academic year in all year groups using a Mastery approach. In EYFS it is taught through two main areas: 'Creating with materials' and 'Being Imaginative and Expressive' following guidance from the 'Early Years Foundation Stage Statutory Framework' and the 'Development Matters' (non-statutory) documents. In Key Stage One Design and Technology is taught through following guidance from the KS1 National Curriculum.

Teachers model and scaffold learning, celebrating every child as a designer and an individual, and therefore creating outcomes that are inherently unique. Design and Technology is taught through explicit teaching as well as opportunities for learning and exploration in provision. In provision children are given opportunity for independent investigation and self-lead expression in the Creative Workshop, this may be instigated by a question or challenge set by an adult, or an opportunity to embed and practise newly taught skills, or revisit previous ones. We endeavour to expose children to many different ways of working (tools, materials, design styles) so they become more experienced.

We have an annual Art and Design Week over the academic year where children's learning is largely focused on the Creative Arts subjects – DT, Music, and Art (also incorporating Dance and Drama). There is an expectation that all children across school will be explicitly taught Design and Technology vocabulary using differentiated vocabulary mats and posters and knowledge mats developed by the Creative team (see appendix). Children are also given the opportunity to learn about the life and work of a broad range of designers, ensuring they represent a diverse range of backgrounds, genders, styles, genres, eras in time, location. Learning is challenging and relevant, making meaningful links to our local community and beyond.

As part of Art and Design Week and at the pinnacle of each half term children are given the opportunity to celebrate and share their learning in a showcase activity.

When designing and making, pupils have integral learning focus points:

Design.

Design purposeful, functional, appealing products for themselves and other users based on design criteria generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.

Make

Select from and use a range of tools and equipment to perform practical tasks [for

example, cutting, shaping, joining and finishing].

Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.

Evaluate

Explore and evaluate a range of existing products.

Evaluate their ideas and products against design criteria.

Technical knowledge

Build structures, exploring how they can be made stronger, stiffer and more stable.

Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.

Cooking and nutrition

As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.

Design and Technology in the learning environment:

Design and Technology is an integral part of every classroom provision in the 'Creative Workshop' spaces, which are equipped with tools and materials easily accessible to the children.

The teaching and learning of Design and Technology is evident in all classrooms with vocabulary posters and mats, children's work and photographs displayed as appropriate. Practising designers, styles and varying project contexts are regularly used as a stimulus for learning.

Children also have access to other Design and Technology based areas across the STEM subjects: investigation area, construction and small world area (including construction kits), maths areas, relevant non-fiction books in reading areas, as well as equipment in outdoor areas such as sand, water, large scale construction toys, den building equipment etc.

Our approach to assessment in Design and Technology:

Design and Technology is taught and assessed using a Mastery approach with a 'Learning Without Limits' strategy. Assessment is conducted through observing children and looking at their work and verbal conversations, as well as 'Success with Scissors' (see appendices) formal document which moves with the child through school.

By the end of each key stage 1, pupils are expected to know, apply and understand the

matters, skills and processes specified in the Design and Technology school programme of study which is deeply rooted in the National Curriculum and statutory framework attainment targets.

We assess pupils' progression and performance by judging the extent to which they have learnt the subject content set out in our curriculum document; do they have the essential knowledge, understanding and skills? Our assessments are made based on children's oracy skills to identify the intended product, user and purpose, as well as their ability to reflect and evaluate.

We have developed a formative assessment system that:

- considers broadly what the pupil knows, understands and can do. The Design and Technology programme of study sets out what pupils should be taught by the end of Key Stage 1.
- Our assessment system is built into the school curriculum, so that staff can check what pupils have learnt and whether they are on track to meet National Curriculum expectations.
- Staff gather and evaluate evidence about pupils' progress in Design and Technology, to inform pupil tracking data. (See tracker in appendices).
- To promote consistency, year groups use a common approach to formative assessment.
- Sets out steps for children to reach or exceed at the end of Key Stage 1.
- Judges whether children are on track to meet end of Key Stage 1 expectations.
- Helps to pinpoint aspects of the curriculum where pupils are falling behind or highlights where gaps are presenting.
- Supports and informs planning and teaching for all pupils.
- Is used to inform end of year report and feedback to parents/ carers and, where pupils move to other schools, provide clear information about each pupil's strengths, weaknesses and progress.

Evidence:

Articulation: one to one, peer to peer, small groups, whole class. Teachers walk around classrooms looking and listening to conversations, to understand where children are at.

Sketchbooks: as both a conversational tool between pupil and teacher, and as a display of application of knowledge, understanding and skill. There is no formal marking of the sketchbooks as we hold the belief that the sketchbooks belong to the children and they have ownership over them. Sketchbooks are used to facilitate exploration, as well as provoking discussion and reflection. Teachers use all this, in an ongoing process, as formative assessment, and use the information to identify what is working for that pupil, and what their future learning needs might be.

Stem sentence prompts sheet are provided at the front of sketchbooks to support children in reflecting or annotating their work.

Development work: all the work produced along the way, before any final piece. Again, staff check intention and understanding through conversation alongside what is seen.

Final work: We are aware that “safe” final outcomes can hide poor learning journeys, and sometimes an excellent learning journey might not be reflected in the final piece. Progression is not linear and in creative subjects and pupils can stall or make leaps for a variety of reasons, none of which need “marking”, though we do use these moments of progression to inform what that pupil needs to help them develop further.

Intervention in Design and Technology:

As we teach Design and Technology using a mastery approach, it is accessible to all children with varied outcomes and levels of support. Design and Technology is used as part of our sensory provision for SEND children who require it, for example Lego therapy.

Design and Technology across the curriculum:

As with all foundation subjects in our school, the teaching and learning of Design and Technology takes place across topics with an emphasis on cross-curricular links. It is incorporated consistently into daily classroom routines and is used to enhance learning in other curriculum subjects wherever possible.

Enrichment opportunities in Design and Technology:

Creative Workshops – each year we welcome Design and Technology specialists into school to provide workshops for our children. Over the year all children in EYFS1, EYFS2, Year 1 and Year 2 are given the opportunity to take part in workshops involving meeting real designers, which enhances their learning of Design and Technology skills and extends their knowledge.

We currently offer a range of extra curricular activities including Art Club where Design and Technology elements are incorporated. Cooking and food preparation is also integral to clubs such as the ‘Christmas club’. These afterschool sessions are paid for by parents, with some funded places being offered to vulnerable children (Pupil Premium).

We work collaboratively with other organisations to provide new meaningful opportunities for the children to be a part of. The children are invited to take part in events such as competitions, and external projects.

Each half term children are invited to produce work related to the topic at home. These are then put together with work made in school to create an exhibition showcase. Children have

the opportunity to visit other classes and explore their work. This creates a platform for discussion around important learning points that half term, as well as practising reflection skills considering what went well and what would be even better.

Design and Technology References:

National Curriculum in England: Primary Curriculum
Early Years Foundation Stage Statutory Framework.
Early Years Foundation Stage Development Matters (non-statutory)

We use guidance and current best practise, from training and resources, through our memberships to:

Design and Technology Association
NSEAD

Design and Technology Appendices:

Design and Technology Curriculum Overview
Design and Technology Intent Statement
Sketchbook stem sentence prompts
Vocabulary posters
Vocabulary mats
Knowledge mats
Classroom audit
Resources audit
Progression map
Pupil tracker
Success with scissors assessment tool.

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