



Design and Technology

“A design is not just what it looks like, design is how it works.” Steve Jobs

Design Technology should provide children with a real life context for learning. At Caton Primary School we want to allow children to have higher aspirations through creating opportunities in the wider world. Through the Design Technology curriculum, children should be inspired by engineers, designers, chefs and architects to enable them to create a range of structures, mechanisms, textiles, electrical systems and food products with a real life purpose. The DT curriculum at Caton encourages children to learn to think and innovate to solve problems both as individuals and as members of a team. Where possible DT is linked to other areas of the curriculum that are being taught alongside giving context, purpose and real life application.

Purpose and aims of design and technology (NC programmes of study)

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.

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

These are all taught through the process of ‘Design, Make and Evaluate’ alongside learning technical knowledge that will allow pupils to make informed choices and decisions as to their designs. Click here for a link to the NC document outlining these processes in more detail.

EYFS and Design Technology

Within the EYFS curriculum, this subject is covered in some of the aspects of Characteristics of Effective Learning as well as the specific areas of Creative Arts and Design and the core area of PSED.

Playing and exploring - Plan and think ahead about how they will explore or play with objects, Make independent choices

Active learning - Keep on trying when things are difficult.

Creating and thinking critically - Review their progress as they try to achieve a goal. Check how well they are doing.

Return to and build on their previous learning, refining ideas and developing their ability to represent them.

Create collaboratively, sharing ideas, resources and skills.

Creative Arts and Design - Provide children with a range of materials for children to construct with. Encourage them to think about and discuss what they want to make. Discuss problems and how they might be solved as they arise. Reflect with children on how they have achieved their aims. Teach children different techniques for joining materials, such as how to use adhesive tape and different sorts of glue.

PSED - Know about healthy eating

| Reception / KS1 | | | |
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| KNOWLEDGE and possible topic links (Year 1 and Year 2) | | | |
| | Autumn | Spring | Summer |
| Reception | What does healthy food mean? (cooking) <ul style="list-style-type: none"> • Healthy snacks linked to ‘All about me’ | Design a way to get across a river (structures) <ul style="list-style-type: none"> • linked to ‘Fairy Tales’ | Making a model with moving parts (mechanisms) Hobby horses (textiles) Link to Forest School programme. |
| Cycle A | Windmills, local landmarks (structures) <ul style="list-style-type: none"> • linked to ‘Where we Live’ | Pouches - (textiles) A balanced diet - links to superheroes | Moving story book (Mech) <ul style="list-style-type: none"> • linked to Adventure stories |
| Cycle B | Wheels and axles (Mech) <ul style="list-style-type: none"> • linked to transport/toys | Castles - (structures) <ul style="list-style-type: none"> • linked to ‘traditional stories’ | Puppets (textiles) <ul style="list-style-type: none"> • linked to materials and seaside Healthy snacks - let’s make a picnic |

Knowledge, Skills and Understanding breakdown for Design and Technology

| | DESIGN | MAKE | EVALUATE | TECHNICAL KNOWLEDGE |
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| Reception | Can they think of some of their own ideas of what they want to create? Can they explain their idea Can they make a simple drawing of their idea? | Can they make independent choices as to which materials, tools and joining methods to use based on their prior explorations? | Can they talk about what they have made? Can they test out what they have made? Can they add to, modify, improve their work? | Can they explore a variety of moving parts on products and talk about how they work? Do they know that different materials have different properties and purposes |
| Year 1 | Can they think of some ideas of their own based on a design criteria? Can they explain what they want to do? Can they use pictures and words to plan? | Can they explain what they are making? Can they explain which tools are they using? | Can they describe how something works? Can they talk about their own work and things that other people have done? Can they say what they like and dislike about their work and what they would change? | Can they think of ways to make their product stronger or stiffer? Do they have some understanding of how levers, wheels and sliders work? Can they select materials based on their understanding of its properties and uses. |
| Year 2 | Can they think of ideas based on a problem and plan what to do next? Can they describe their design by using pictures, diagrams, models, talking and technology? | Can they choose the best tools and materials? Can they give a reason why these are best? Can they join, cut, shape and finish (materials/ components) in different ways? | What went well with their work? Did it meet the design criteria? If they did it again, what would they want to improve? Can they troubleshoot scenarios posed by the teacher? | Do they know how to manipulate materials to create stable, strong or stiff structures? Can they choose which mechanism would work best in their products? Do they know that there is always an input and output in a mechanism? |

Breadth of study (see [Kapow scheme of work](#) for greater detail)

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| Year 1 | Cooking and nutrition Can they cut food safely? Can they describe the texture of foods? | Textiles Can they describe how different textiles feel? | Mechanisms Can they follow a design to make a moving model that | Structures Can they make a stable structure from card, tape and glue? Can they talk with others about how they want to construct their product? Can they select appropriate resources and tools for their building projects? |
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| | <p>Do they wash their hands and make sure that surfaces are clean? Can they think of interesting ways of decorating food they have made, eg, cakes? Do they know and understand the difference between fruit and vegetables?</p> | <p>Can they cut fabric neatly? Can they join material together using glue, staples or pins? Do they understand the purpose of templates?</p> | <p>uses levers and sliders? Can they cut materials using scissors? Can they describe the materials using different words? Can they say why they have chosen moving parts? Can they test their model and troubleshoot basic problems?</p> | <p>Can they make simple plans before making objects, e.g. drawings, arranging pieces of construction before building? Can they make their model stronger if it needs to be? Can they test their product?</p> |
| Year 2 | <p>Cooking and nutrition</p> <p>Can they describe the properties of the ingredients they are using? Can they explain what it means to be hygienic? Are they hygienic in the kitchen? Can they describe a balanced diet? Do they know what constitutes a healthy diet?</p> | <p>Textiles</p> <p>Can they select and cut fabrics for sewing? Can they thread a needle? Can they sew running stitch, with evenly spaced, neat, even stitches to join fabric? Can they pin and cut fabric using a template</p> | <p>Mechanisms</p> <p>Can they select materials according to their characteristics and follow a design brief to make a moving model? Can they use peer feedback to modify and improve their final design?</p> | <p>Structures</p> <p>Can they make a structure according to design criteria? Can they make sensible choices as to which material to use for their constructions? Can they develop their own ideas from initial starting points? Can they incorporate some type of movement into models? Can they create joints and structures from paper/card and tape? Can they consider how to improve their construction? Can they think of an appropriate way to test their product?</p> |

| Lower Key Stage 2 | | | |
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| KNOWLEDGE (Year 3 and Year 4) | | | |
| | Autumn | Spring | Summer |
| Cycle A | Textiles: (cushions/toys) | Food: What could be healthier? <ul style="list-style-type: none"> Adapt a recipe by adding or altering ingredients and learn about the ethical and hygienic issues of food | Digital World - electronic charm (linked to computing) Mechanical systems - making slingshot car |
| Cycle B | Textiles: (fastenings) <ul style="list-style-type: none"> link to Art topic on textiles and history link to Mills Mechanical systems:(pneumatic toys) <ul style="list-style-type: none"> To explore pneumatic mechanisms to make a moving toy (omit lesson 1) | Structures: Pavilions <ul style="list-style-type: none"> Link to ancient Greece topic | Food: Eating seasonally Electrical systems - doorbell - omit lesson 1 (linked to science from Spring) |

| Knowledge, Skills and Understanding breakdown for Design and Technology | | | | |
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| Year 3 | | | | |
| | DESIGN | MAKE | EVALUATE | TECHNICAL KNOWLEDGE |
| Year 3 | Can they show that their design meets a range of requirements? Can they put together a step-by-step plan which shows the order and also what equipment and tools they need? | Can they use equipment and tools accurately? Can they construct a range of 3D geometric shapes using nets? Can they create special features for individual designs? Can they select from a range of recycled materials? | Can they explain what they changed which made their design even better? | E |

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| | Can they describe their design using an accurately labeled sketch and words? How realistic is their plan? | | | |
| Year 4 | Have they thought of how they will check if their design is successful? Can they begin to explain how they can improve their original design? Can they evaluate their product, thinking of both appearance and the way it works? Do they take time to consider how they could have made their idea better? | Can they tell if their finished product is going to be good quality? Are they conscious of the need to produce something that will be liked by others? Can they show a good level of expertise when using a range of tools and equipment? Do they work at their product even though their original idea might not have worked? | Have they thought of how they will check if their design is successful? Can they begin to explain how they can improve their original design? Can they evaluate their product, thinking of both appearance and the way it works? Do they take time to consider how they could have made their idea better? | |

Breadth of study

| Year 3 | Cooking and nutrition | Textiles | Digital World | Electrical and mechanical components | Structures | Mechanisms |
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| | Can they choose the right ingredients for a product? Can they use equipment safely? Can they make sure that their product looks attractive? Can they describe how their combined ingredients come together? Can they set out to grow plants such as cress and herbs from seed with the | Can they join textiles of different types in different ways? Can they choose textiles both for their appearance and also qualities? Can they blanket stitch? | | Do they select the most appropriate tools and techniques to use for a given task? Can they make a product which uses both electrical and mechanical components? Can they use a simple circuit? | Can they constructing a range of 3D geometric shapes using nets? Can they create special features for individual designs? Can they select from a range of recycled materials? | Do they select the most appropriate materials? Can they use a range of techniques to shape and mould? Do they use finishing techniques? |

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| | intention of using them for their food product? | | | Can they use a number of components? | | |
| Year 4 | Cooking and nutrition Do they know what to do to be hygienic and safe? Have they thought what they can do to present their product in an interesting way? | Textiles Do they think what the user would want when choosing textiles? Have they thought about how to make their product strong? Can they devise a template? Can they incorporate a fastening into their product? | | Electrical and mechanical components Can they add things to their circuits? How have they altered their product after checking it? Are they confident about trying out new and different ideas? | Structures Can they construct a stable structure that is designed to support weight? Can they measure carefully so as to make sure they have not made mistakes? How have they attempted to make their product strong? | Mechanisms Can they use a range of advanced techniques to shape and mold? Do they use finishing techniques, showing an awareness of audience? |

| Upper Key Stage 2 | | | |
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| | Autumn | Spring | Summer |
| Cycle A | Mechanical systems Automata toys <ul style="list-style-type: none"> Designing a Christmas game | Digital world: navigating the world (linked to computing) | Food: Come Dine with me <ul style="list-style-type: none"> Working in groups, children research and prepare a 3 course meal that will be taste tested and scored as well as researching the journey of their main ingredients from farm to fork |
| Cycle B | Food - what could be healthier <ul style="list-style-type: none"> Cookery (linked to WWII and rationing) | Textiles: Study of a famous fashion designer <ul style="list-style-type: none"> Creating / sketching their own design for an item of clothing - | Mechanisms: pop up books <ul style="list-style-type: none"> linked to the Very Hungry Caterpillar in French (omit lesson 4) |

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| | <p>Electrical systems: Steady hand game</p> <ul style="list-style-type: none"> Explore electric circuits and apply this knowledge to design and make their own Christmas games for the fair (omit lesson 1) | <p>linked to French fashion show</p> <p>Structures: linked to ancient Greece (see bridges unit in Kapow for skills)</p> <ul style="list-style-type: none"> Test for strength and stability (link to Computing, vector drawing and 3D modeling) | <p>Mechanisms</p> <ul style="list-style-type: none"> Woodworking skills Explore cams to design and make a moving caterpillar |
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| <p align="center">Knowledge, Skills and Understanding breakdown for Design and Technology</p> | | | |
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| <p align="center">Year 5/6</p> | | | |
| | <p align="center">Developing, planning and communicating ideas</p> | <p align="center">Working with tools, equipment, materials and components to make quality products</p> | <p align="center">Evaluating processes and products</p> |
| <p>Year 5</p> | <p>Can they come up with a range of ideas after they have collected information? Do they take a user's view into account when designing? Can they produce a detailed step-by-step plan? Can they suggest some alternative plans and say what the good points and drawbacks are about each?</p> | <p>Can they explain why their finished product is going to be of good quality? Can they explain how their product will appeal to the audience? Can they use a range of tools and equipment expertly? Do they persevere through different stages of the making process?</p> | <p>Do they keep checking that their design is the best it can be? Do they check whether anything could be improved? Can they evaluate appearance and function against the original criteria?</p> |
| <p>Year 6</p> | <p>Can they use a range of information to inform their design? Can they use market research to inform plans? Can they work within constraints? Can they follow and refine their plan if necessary? Can they justify their plan to someone else? Do they consider culture and society in their designs?</p> | <p>Can they use tools and materials precisely? Do they change the way they are working if needed?</p> | <p>How well do they test and evaluate their final product? Is it fit for purpose? What would improve it? Would different resources have improved their product? Would they need more or different information to make it even better? Does their product meet all design criteria?</p> |

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| | | | | | Did they consider the use of the product when selecting materials? |
| | Breadth of study | | | | |
| Year 5 | Cooking and nutrition Can they describe what they do to be both hygienic and safe? How have they presented their product well? | Textiles Do they think what the user would want when choosing textiles? How have they made their product attractive and strong? Can they make up a prototype first? Can they use a range of joining techniques? | Electrical and mechanical components Can they incorporate a switch into their product? Can they refine their product after testing it? Can they incorporate hydraulics and pneumatics? | Stiff and flexible sheet materials Are their measurements accurate enough to ensure that everything is precise? How have they ensured that their product is strong and fit for purpose? | Moldable materials Are they motivated enough to refine and further improve their product using moldable materials? |
| Year 6 | Cooking and nutrition Can they explain how their product should be stored with reasons? Can they set out to grow their own products with a view to making a salad, taking account of time required to grow different foods? | Textiles Have they thought about how their product could be sold? Have they given considered thought about what would improve their product even more? | Electrical and mechanical components Can they use different kinds of circuit in their product? Can they think of ways in which adding a circuit would improve their product? | Stiff and flexible sheet materials Can they justify why they selected specific materials? How have they ensured that their work is precise and accurate? Can they hide joints so as to improve the look of their product? | Moldable materials Can they justify why the chosen material was the best for the task? Can they justify design in relation to the audience? |