

# Design & Technology Policy

<b>Our Shared Vision &amp; Values</b>		<b>Aspire to Achieve</b>
A S P I R E	We are ambitious to <b>ACHIEVE</b> ;	we aim high, anything is possible!
	We show <b>SELF-RESPECT</b> ,	we support each other with empathy, tolerance and quiet confidence.
	We are <b>PROUD</b> :	positive, practical and we persevere.
	We want to be <b>INSPIRED</b> ,	show our creativity, "Dream Big".
	We demonstrate <b>RESILIENCE</b> ;	we learn from our mistakes, are reflective and reciprocal, take responsibility for our actions.
	Everyone is <b>EQUAL</b> ;	there are exciting experiences at Carlton Road for all.

## The Context of our School and its Curriculum

Carlton Road Academy is a two-form entry school with our own attached Nursery based in Boston, Lincolnshire. With a cohort drawn from the immediate area, the school serves a diverse community with a greater-than-average number of EAL and Pupil Premium students; mobility is high. As a result, it is key that our approach to teaching and learning is accessible to all children, regardless of their background. Our ethos "Aspire to Achieve" is embedded throughout the school, it's curriculum and our knowledge expectations – we expect our children to "Aim High" and "Dream Big".

Our "Aspire" curriculum brings to life the school's ethos and values. It embraces the whole child and their success in education – both academic ambition, practical skills, and social achievements. At the same time, we expect the children to be proudly responsible of and for their own efforts, to persevere when the going is not always easy thereby making their individual contribution to the shared, equalitarian, and democratic learning experience at Carlton Road.

## Curriculum Intent

### Design & Technology

At Carlton Road Academy, the teaching of Design & Technology encourages our pupils to become creative and imaginative thinkers. Through the use of resourceful and practical activities, the children are taught the skills and knowledge they need to be able to design and make a purposeful product which links to other areas of learning. This allows for cross-curricular connections to be made. Our curriculum is set up to allow pupils to take risks, to become resourceful, innovative, enterprising, and capable citizens. In a world where engineering, technology and design are critical; we want to ensure the children know about the opportunities which exist in these industries and how they can take part in these. It is our intention to inspire pupils to want to shape the future; and with our exciting and engaging Design & Technology curriculum we believe we can achieve this.

Our curriculum promotes	A S P I R E	<b>Achievement,</b>	all learners are academically ambitious, aim high, maximising their own potential from their considerably different starting points. Everyone reads with enjoyment and enthusiasm. Anything is possible!
Our curriculum instils		<b>Self-respect,</b>	creating confidence, tolerance and mutual respect within the whole school community, children support and encourage each other upholding British Values.
Our curriculum promotes pupil's		<b>Pride,</b>	they feel part of something bigger, maintain positivity, take pleasure in their work, using both practical skills and their own mindset to help them persevere.
Our curriculum enables students to be		<b>Inspired;</b>	its varied content and wide-reaching subject matter offers a wealth of learning opportunities that encourage creativity, from close to home and further afield; we "Dream Big" at Carlton Road.
Our curriculum develops learners who are		<b>Resilient</b>	to be honest in their understanding and learn from their mistakes, overcome setbacks and challenges, to take responsibility for their own learning, to be reciprocal and reflective in lessons.
Our curriculum embodies		<b>Equality;</b>	everyone is entitled to exciting experiences, cultural, sporting and enriching and to have their views and voices heard.

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At Carlton Road Academy, we encourage our pupils to open their mind to the world around them. We provide them with the knowledge and skills they need to be capable, creative thinkers when it comes to designing and constructing. We expose our children to a range of tools and materials which engage and excite them throughout their learning experience.

<b>A</b>	<b>Achievement</b>	Children are given opportunities to achieve in their own way. Design & Technology is centred around individuals using their own design ideas, recognising while all will achieve, their way may not be the same way as others. That is how innovations come about.
<b>S</b>	<b>Self-respect</b>	Children are encouraged to think about their own actions and behaviour. Design & Technology often requires team efforts, we expect our children, alongside their peers and teachers, to “build themselves up”, to increase their self-esteem, as they progress through the curriculum. Through demonstrating their creativity, we aim to instill confidence and resilience into our pupils thereby encouraging them to truly believe in themselves.
<b>P</b>	<b>Pride</b>	At Carlton Road Academy, we want our children to feel proud of what they have achieved. We not only want them to be proud of their end product during Design & Technology projects, but also the journey they’ve taken to reach that end goal. We encourage learners to feel positive about themselves, noticing their growth along the way.
<b>I</b>	<b>Inspired</b>	Design & Technology is our opportunity to inspire children and young people to want to make a difference to the world. We believe that we can motivate our learners to want to become engineers, designers, architects, or work in fields such as construction or graphics, making a real difference to the world they will grow up in.
<b>R</b>	<b>Resilient</b>	Children are constantly encouraged to never give up. We aim to support our pupils in becoming ‘reflective learners’ where they can identify improvements that can be made to a product, so it reaches its full potential. Resilience is key during Design & Technology lessons as many new skills are taught, which don’t always come easily to begin with. We ensure our pupils not only feel safe enough to make mistakes, but to try, try and try again until they achieve their end goal, the support of their peers and adults aids this process.
<b>E</b>	<b>Equality</b>	Children are given equal opportunities throughout the teaching of Design & Technology. We ensure that all learners can participate in all areas of learning, taking into consideration any difficulties they may encounter along the way. We pride ourselves on providing our learners with a range of exciting experiences. These include cookery, woodwork, textiles, computer aided design and many more.

### Curriculum Implementation

#### How we deliver our curriculum:

Teaching and learning turns “thinking” (the task of the working memory) into “knowledge” (our long-term memories) that can be recalled and used again and again.

The table below demonstrates the types of knowledge the children acquire and what that looks like in Design & Technology.

	Forms of Knowledge	What that knowledge looks like in school	What that knowledge looks like in Design & Technology
<b>A</b>	Academic Answers	Children encounter facts, learn knowledge that is “known”: number bonds, spellings, capital cities, the wives of Henry VIII, colours. Facts that can be straightforwardly shared, memorised and recalled.	The children will know the vocabulary appropriate to DT materials, tools, and skills such as “Perspex”, “vice”, “template “or “mitre”; they will find out about influential designers, engineers, or industrialists– what they created and when. Key questions are used to recap previous knowledge learnt. This gives the class teacher an indication of what the children already know and what they need to know to move their learning on.
<b>S</b>	Situational and Symbolic	Children interpret knowledge in the context of what they comprehend from the cultures they know/their context/ community/ heritage. This includes their understanding of symbols – written, gestures, body language, pictorial, coded such a computers or road signs etc.	The children will know how to interpret technical drawings and templates, they will be able to understand symbolic diagrams. They will know what symbols and icons mean on packaging and materials, especially ones which indicate a hazard or danger. They will read domestic signage such as washing instructions for textiles and those included on food wrappings and containers. They will know what the symbols are needed to represent electrical circuits.
<b>P</b>	Practical – the “How to?”	Children learn practical knowledge when they need to know the “How to...” e.g., ride a bike, read a map. The knowledge may come in steps or stages. It could be written down to follow like a recipe or automatically retrieved, once learnt, such as how to swim.	As part of our Design & Technology lessons, we ensure the children participate in a ‘focussed practical task’. The purpose of this is to teach the children the knowledge and the skill they need to be able to create their finished product. This is a key part of the sequence of learning as it allows the children to become confident with combining the” what” knowledge above with the “how to”. For example, in textiles, the children must first know what needle designs available and which yarn is right for the task plus the purpose of a range of stitches before they are then expected to thread the needle, sew, and then create a product. We give the children a variety of opportunities to experiment with a range of tools and materials.
<b>I</b>	Implicit and Incidental	Implicit knowledge often unconsciously obtained, and we may not recall learning it: such as how to walk or talk, it builds on past experiences. Incidental knowledge is similar in that we acquire it from experiences, but these are unplanned or unintended.	The Design & Technology curriculum is progressive throughout the school. The children will come to know and be familiar with a range of products e.g.: those made from textiles, cookery, or frame structures. They will encounter these several times during their time at Carlton Road Academy, each time they will build on their prior knowledge until it becomes implicit. Children will begin to simultaneously use incidental knowledge that they have acquired from previous experiences. For example., in EYFS in cookery, the children learn how to use a knife safely. As this is embedded throughout the year, when they move onto Year 1, they are already capable of doing this and can learn new cutting skills to further extend their existing knowledge.
<b>R</b>	Relationships and Real Life	This is knowledge that supports children build relationships and understand how social interactions work; the knowledge behind “real life” skills such as empathy, friendship, honesty. For some it comes naturally, most children need a level coaching to acquire it.	Although we encourage our children to acquire their own design ideas, we do also assist them to work with others as part of a team. We may provide our pupils with a role to play in the team or give them the opportunity to decide their own. Particularly when working on large scale projects, our children need to work together to support one another in different ways. Teachers and support staff, consistently model how to work effectively as a team so that the children can identify and learn what this may look like in their own learning experiences. We encourage our children to be critical thinkers; teaching them to share their thoughts and opinions in a respectful, considerate manner. Whether in school or in the field gaining knowledge from “real” experts or observations.

<b>E</b>	<p><b>Experiences and Experts</b></p>	<p>This is knowledge built up from a range of experiences both undertaken or personally encountered such as a visit to a place of historical interest, it may be explicitly taught, or delivered by an “expert” such as a professor, or sensorily observed such as an experiment.</p>	<p>As part of the processes in Design &amp; Technology (design, make, evaluate), we endeavour, where possible, to provide our pupils with real life experiences with whatever product it is they are making. We believe that children become more interested and excited about learning if they are given the opportunity to have a ‘hands on’ experience with it. In addition to this, it gives the children a chance to ask questions and become critical thinkers when it comes to their own end product. For example, in Year 1 the children make kites as part of their textile’s topic. Prior to the children making a kite, we provide opportunities for them to fly them. This is to provide them with the knowledge they need on what a kite is, how it flies, the weather conditions needed, and so on; this gives the product a real purpose.</p>
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**In Design & Technology we teach to secure that knowledge in the following ways:**

	<b>How the children will acquire their knowledge:</b>	<b>What that practice looks like in Design &amp; Technology</b>
<b>A</b>	<p><i>Active</i> construction of knowledge, the acquisition of <i>vocabulary</i>, teacher <i>articulation</i> of learning processes and the <i>asking and answering</i> of questions.</p>	<p>When planning Design &amp; Technology lessons, our teachers identify any key vocabulary that can be revisited from prior learning and also any new vocabulary that will further extend the children’s knowledge. This vocabulary is displayed in the classroom on the learning walls so that pupils can refer back to it throughout their lessons. In addition to this, teachers will identify a range of key questions to ask. Class teachers have a sound understanding of what level each pupil is working at and this enables them to pitch questions to challenge and stretch all abilities.</p>
<b>S</b>	<p><i>Staged</i> development enables children to join up intertwined groups of meaningful knowledge into <i>schemas</i>. This comes <i>semantically</i>, through the <i>senses</i>, through <i>skills</i> and <i>socially</i>.</p>	<p>As a child experiences the range of knowledge in our curriculum, step by step, they begin to make links – words and meaning (semantics) match events that have been experienced through their senses – sounds, sights, smell. These then match up with skills that are learnt and social opportunities. The final “product” being a schema that helps them organise their knowledge. For example in DT a child will know that a boat is a vessel that floats on the water, they may have been on a boat ride and can recall it, they link heavy items that sink with light items that float, they know the wind can blow objects along ; this “boat” schema will extend and grow as they learn about sails and wind resistance to design a yacht of their own that can sail in a regatta from one end of the tank to the other.</p>
<b>P</b>	<p><i>Practically</i>: children access a wide range of memorable learning through <i>play</i>, the <i>power of stories pictures and print</i> and through <i>problem-solving</i> activities.</p>	<p>When completing a Design &amp; Technology project, children will often face several problems relating to the process they are following. We encourage our pupils to be problem-solvers by guiding their learning through questioning. We offer support; however, we do encourage the children to use their existing knowledge to help them overcome any difficulties, finding practical ways to solve them. This also builds resilience; one of our key values.</p>
<b>I</b>	<p><i>Internalisation</i> of learning through <i>interaction, instruction, imitation</i> and <i>integration</i> aids the movement of thoughts to long term memory.</p>	<p>Children will listen to teacher instructions, they may follow them from a text such as a recipe, they may imitate what they have seen the adult or expert do in their modelling of a task. They may interact, share and discuss ideas integrating these design ideas into a final product. All of the above support the internalisation of knowledge acquired in D&amp;T moving it into the long-term memory.</p>
<b>R</b>	<p><i>Retrieval</i> of knowledge through <i>repetition, revision, recycling</i> and <i>routine</i> prompts memory “muscle” to work, making knowledge “stick”.</p>	<p>Although we complete our Design &amp; Technology learning in blocks, children are always participating in retrieval activities to help embed their learning. Where possible, our D&amp;T blocks are planned around the children’s topics. This enables them to embed key knowledge from other curriculum areas, as well as extending it through the use of D&amp;T. Children participate in similar blocks of learning but with added and progressive knowledge during their time at Carlton Road Academy. We</p>

E	<p>Special <i>experiences</i> linked to learning objectives and opportunities in specific <i>environments</i> can enhance the probability of long-term memory retaining key messages.</p>	<p>find this helps as prior knowledge is recapped on giving the children a chance to revise what they have previously learnt.</p> <p>Providing our pupils with exciting, inspiring experiences is something we pride ourselves on at Carlton Road Academy. During D&amp;T, our classrooms and outdoor areas are transformed into workshops, filled with tools, resources and exciting ideas and opportunities. We are also extremely lucky to have our very own cookery room. It is filled with endless amounts of resources to support the pupils during their cookery lessons. The children are always eager and enthusiastic to build on their knowledge and skills whilst using it.</p>
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We teach our Design & Technology curriculum in blocks. The children are taught a 1-week block of D&T throughout a term, which gives them 3 in-depth, thorough and valuable weeks during each school year. Lower down the school in our Early Years Foundation Stage, designing, making and evaluating is embedded into the children’s exciting Expressive Arts & Design curriculum across the whole term so that the children have the foundations they need before they move further up the school.

In Year 1-6, our 3 blocks of learning all focus on different aspects of D&T. For example, in the Autumn term, the children may focus on cookery, Spring term may focus on textiles and summer term focusses on levers and frame structures. This is to ensure our children are exposed to a wide range of skills and knowledge and are able to gain experiences that they may not had have before. Where possible, D&T topics are linked with the year group’s topic of learning for that term. This enables them to use knowledge from other subject areas. For example. In Year 1, the children learn about the weather. For their D&T topic, they make a kite. For this, the children need to have the underlying knowledge of weather conditions needed to fly a kite successfully.

Although we do deliver our D&T curriculum in weekly blocks, we also endeavour to implement it into our everyday practice to give the children the opportunity to embed their key skills and knowledge. This is done through the use of:

- Knowledge Organisers: Children have access to key knowledge, language and meanings to understand Design and Technology and to use these skills across the curriculum. These also include a range of key knowledge from other curriculum areas.
- Working Walls: Each classroom has a topic specific working wall which is updated weekly. During Design and Technology week, this will be solely focussed on this area of learning. This will be kept up in the classroom so that the children can refer back to it at all times. It will include a variety of key words, examples of modelled work and key questions.
- Subject specific vocabulary: Identified through knowledge organisers and working walls and highlighted to the children at the beginning of and during lessons.
- EYFS: Reception children are given a secure grounding in the Prime Areas of learning, ensuring they have a good foundation on which to build through the specific areas, including Understanding the World. Areas of provision are enhanced to ensure vocabulary understanding and extension and develop understanding of the world around them.
- Books: Children will have access to a growing variety of subject specific fiction and non-fiction books, available in Design and Technology lessons, other lessons and in the class book area. Wherever possible, children will use a range of non-fictions books which include elements of design. This is especially important during food and nutrition lessons.

- Use of existing product artefacts: Where possible we use existing products for children to explore and investigate. We believe that handling real objects enhanced the children's knowledge, understanding and skills.
- Learning environment: The learning environment is designed to ensure children develop their Design and Technology knowledge and continue to know more and remember more. Working walls are key drivers to this, with teachers referring to them during lessons.
- Research: Children will be asked to research products and processes in relation to aspects of their learning independently. This allows the children to have ownership over their curriculum and lead their own learning.
- Basic skills -English, Maths and ICT skills are taught during discrete lessons but are revisited in Design and Technology so children can apply and embed the skills they have learnt in a purposeful context. The expectation is that standards in writing in Design and Technology are comparable with standards in English lessons.
- **Cultural Capital** - We plan visits, visitors, and in-school WOW days to provide first-hand experiences for the children to support and develop their learning, but a visit to the museum alone will not generate cultural capital. It is the *combination of knowing, what, how, why and seeing experts or specialised environments* that pulls knowledge together to create cultural capital.

## Planning our curriculum:

Our curriculum is delivered in line with the National Curriculum. Although we do plan from this, we also ensure opportunities are provided where children can develop additional skills, knowledge and understanding to enhance our curriculum where necessary. We follow the national curriculum's process during D&T; design, make, evaluate. However, we do also provide opportunities for children to evaluate existing products, become critical thinkers, investigate ways of improving a product and to use their ever-expanding knowledge of vocabulary to express their views and opinions. We encourage our pupils to ask themselves, their peers and their support staff questions which will widen and stretch their knowledge and thought processes. In addition to this, effective questioning is used by teachers and support staff as an assessment tool during each process of learning.

Teacher's pay heed to the Voyage Trust's **D&T Progression Map** so they can see what knowledge the child should have already and what is to come in future years.

The map shows the specific curriculum areas of knowledge that combine together to enable our children to become successful in all areas of Design and Technology.

## In KS1 these are:

### 1. Design

- To know how to design a purposeful, functional, appealing product for themselves and other users based on design criteria
- To know how to generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology

### 2. Make

- To know how to select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
- To know how to select and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics

### **3. Evaluate**

- To know how to explore and evaluate a range of existing products
- To know how to evaluate their ideas and products against a design criterion

### **4. Technical knowledge**

- To know how to build structures, exploring how they can be made stronger, stiffer and more stable
- To know how to explore and use mechanisms [for example, levers, sliders, wheels and axles] in their products

### **5. Food and Nutrition**

- To know how to use the basic principles of a healthy and varied diet to prepare dishes
- To know where food comes from

## **In KS2 these are:**

### **1. Design**

- To know how to research and develop a design criterion to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups
- To know how to generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design

### **2. Make**

- To know how to select and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
- To know how to select and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities

### **3. Evaluate**

- To know how to investigate and analyse a range of existing products
- To know how to evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- To know how key events and individuals in design and technology have helped shape the world

### **4. Technical knowledge**

- To know how to apply their understanding of how to strengthen, stiffen and reinforce more complex structures
- To know how to use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
- To know how to use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]
- To know how to apply their understanding of computing to program, monitor and control their products

## 5. Food and Nutrition

- To know and understand how to apply the principles of a healthy and varied diet
- To know how to prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques
- To know and understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed.

### Evidence of key knowledge:

Each child from Y1-Y6 has a Design and Technology book where their learning journey is recorded. This moves up with the children as they move through the school. This journal holds the key knowledge that they have developed during each project. The knowledge and skills are progressive which allow children to embed previous skills taught and then extend on them. This can be referred back to during each block to remind the children of prior learning and support them in identifying the progression.

## Impact

### Assessment

There is no statutory assessment in D&T however teachers use assessment to monitor progress and to identify any child needing additional support as soon as they need it.

- [Assessment for learning](#) is used:
  - In the actual lesson to inform the teacher and support staff of who may need further support from either their peers or staff. Key questioning is used to gain an overall understanding of what the child knows and what they need to know in order to move their learning on.
  - At the end of a unit of work, the class teacher will assess whether the children have gained the knowledge and skills for that unit. This will inform the teacher of key learning areas when teaching the new block of Design & Technology. The class teacher will also be able to pass this onto the next year group teacher for when they cover the topic again i.e., if a pupil needed a large amount of support during textiles in Year 1, the class teacher can pass this information onto the Year 2 teacher, so they are aware when it comes to teaching textiles again.

**This policy was most recently updated in:**

February 2022