Design & Technology

Our aim at Penponds is to ensure that all children are inspired to imagine, design and make products that solve real and relevant problems within a variety of contexts.

We believe that Design & Technology should be about supporting pupils to take risks, becoming innovative citizens for the world in which they live. Through the evaluation of Design and Technology we want to inspire children to understand the impact of design and technology and its essential contribution to the creativity, culture, wealth and well-being of the nation.

We ensure that all children learn about Design & Technology through a variety of projects. Through the development of skills children begin designing appealing products for themselves before linking this understanding to the future design of purposeful and functional projects. Children are encouraged to evaluate existing products and discuss improvements to their designs and products.

In Design & Technology lessons, children will produce creative designs, exploring their ideas and understanding the correct skills needed to turn their design into a reality. Children's learning progresses through each year group where the purpose and complexity is suitably increased. Children are taught to understand how high-quality Design and Technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

The Design & Technology Lead is responsible for supporting colleagues in their teaching, keeping them informed of current developments in the subject, and by providing a strategic lead and direction Design & Technology including following the school's robust system for monitoring and assessing.

Our children are supported through our four school values – Curiosity, Creativity, Confidence and Caring- all embodied through our vision, 'Aiming High and Achieving Our Best' and our vision statement:

> *Penponds School will work with all stakeholders to create a* ***happy, safe and stimulating environment*** *where children become* ***'Leaders of their own Learning'.*** *By maintaining* ***high expectations*** *of the whole school community, our children will be equipped to become* ***lifelong learner****s. We encourage* ***curiosity about the world, strive to be creative*** *in everything we do and* ***build confidence*** *in our children to enable them to grasp* ***opportunities and tackle challenges*** *with* ***resilience and self-assurance****.*

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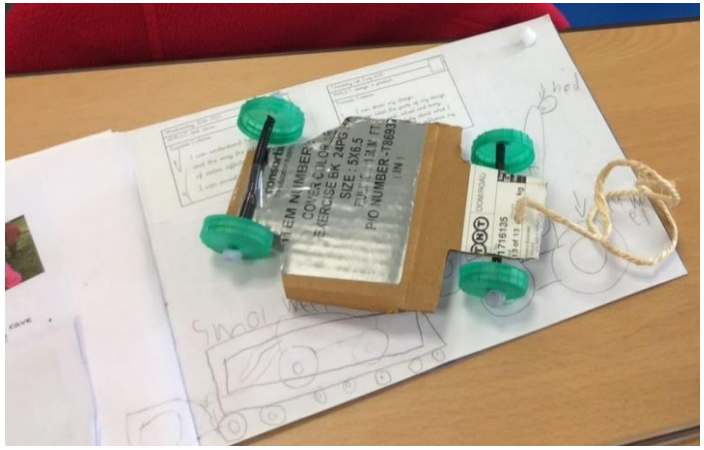

Intent (curriculum design, coverage and appropriateness)	Implementation (curriculum delivery, teaching and assessment)	Impact (attainment and progress)
Our aim for the Design & Technology curriculum is to ensure that all children develop the creative, technical and practical expertise needed to	To ensure that high quality Design & Technology is taking place throughout the whole school we implement a curriculum which is progressive	• Children will be able to talk about their design and technology projects and use subject specific language to discuss what they have learnt

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Design and Technology - Skills and knowledge components: Progression document building from previous year's learning

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	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design	Design a functional product with a purpose for themselves and others. Design a product to do a specific job. Draw and label pictures of their design ideas. Discuss their ideas and explain their choices.	Design an appealing and functional product with a purpose for themselves and others. Use a set of criteria to aid the design process. Draw, and make notes on, their design ideas. Explain what they are making, and what they will need to use.	Design an appealing and functional product with a clear purpose and use for themselves and others. Sketch and label diagrams of their design ideas. Discuss their ideas and explain the purpose, choice of materials, any necessary changes and how it will be made. Explain what they are making, why they are making it and what they will need to use.	Design an appealing and functional product for a particular audience. Create design criteria for a product. Use sketches, labelled diagrams and notes to explain their design. Explain their ideas, the purpose, choice of materials, any necessary changes and how it will be made. Explain what they are making, why they are making it	Research existing products and develop design criteria. Design functional, appealing products aimed at particular individuals or groups. Create detailed design criteria for a product. Communicate ideas by developing sketches, labelled diagrams and notes to support their design. Communicate ideas through discussion,	Research existing products to inform design choices and criteria, taking into consideration user needs. Design innovative, functional, appealing products aimed at particular individuals or groups. Develop a set of criteria, based on research, to aid design process. Communicate ideas by using cross-sectional diagrams, exploded diagrams,

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				and what they will need to use, using the design criteria.	presentation and peer critique. Adapt designs, if needed, after design discussion.,	prototypes, pattern ideas and computer-aided design. Communicate ideas through oral and ICT presentations. Adapt designs, where necessary, based of design feedback.
Make	Name the tools they are using and know how to use them safely. Use given tools to cut, shape, join and finish products. Explore different materials and components to find appropriate	Select and name appropriate tools and equipment needed from a given range. Know which equipment is used for cutting, shaping joining and finishing. Select from a wide range of materials and	Select and name appropriate tools and equipment needed from a suggested range Know and choose which equipment is used for cutting, shaping joining and finishing from a suggested range.	Select and name appropriate tools and equipment needed Know and choose which equipment is used for cutting, shaping joining and finishing. Know the characteristics of materials and	Select, name and use appropriate tools and equipment safely and accurately. Use some specialist equipment accurately and safely. Select from and use a range of specific materials	Select from and use a wider range of specialist tools and equipment. Use specialist equipment for a specific purpose accurately and safely. Select from and use a wider range of specific materials and

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	ways of joining materials.	components, depending on use.	Know some characteristics of materials and components and select from a wide range of these, depending on use.	components and select, depending on use.	and components according to their specific use and appearance	components according to their use and aesthetic properties.
Evaluate	Explore, investigate and use existing products. Say whether or not their product does the job it is supposed to. Explain why their product is good.	Explore and evaluate existing products. Say why a product is good (or not) and what job it does (and if it good / bad at this job). Evaluate their product against their design criteria.	Explore and analyse existing products. Consider why products are good (or not) and how effective they are at meeting their purpose. Suggest ways of improving their own and others' work. Consider how some products have helped the world.	Explore and analyse existing products against a set of criteria. Consider how products were made, why they are good (or not) and how effective they are at meeting their purpose. Suggest ways of improving their own and others' work based on how effective the product is.	Investigate, explore and analyse a range of existing products based on a set of criteria. Evaluate their ideas, prototypes and products against a specific set of criteria. Suggest ways of improving their own and others' work, using their criteria Consider how some people and	Investigate and explore a range of existing products, considering construction and purpose. Evaluate their ideas, prototypes and products against a specific set of criteria they have devised. Suggest ways of improving own and others' work, using specific criteria.

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				Consider how some people and products have helped the world.	products have changed the world.	Identify and understand how key events and individuals in design and technology have helped shape the world.
Technical knowledge	Build structures and explore how they can be made stiffer and stronger using a range of materials. Explore ways of joining cards to make it move (e.g. split pins). Create models with wheels and axels.	Build structures and investigate how they can be made stronger, stiffer and more stable. Explore different ways of joining similar materials together. Create models with wheels, axels and hinges. Explore and use levers and sliders to move part of their product.	Explore how to make structures stronger, stiffer and more stable using more / other materials. Explore different ways of joining things together. Create models which use wheels, axels, hinges to make specific parts move. Explore and incorporate simple circuits	Explore how to make structures stronger, stiffer and more stable using a variety of materials. Explore and different ways of joining things together (both moving joints and fixed joints). Create models which use wheels, axels, hinges and other moving parts for a specific purpose.	Explain how to make structures stronger, stiffer and more stable using engineered designs (e.g. diagonal struts). Explore and analyse a range of linkages (ways of fixing and joining materials – temporary, fixed and moving) to change movement (e.g. make it larger or varied).	Design and build more complex frameworks, using a range of materials to support mechanisms. Apply understanding of how to strengthen, stiffen and reinforce more complex structures. Understand and use CAM mechanisms to

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			and bulbs into their product.	Explore and investigate series circuits, bulbs, buzzers and motors. Use ICT to program and control a moving product.	Create models which use gears, pulleys, levers and linkages for a specific purpose. Create models which use series circuits, switches, bulbs, buzzers and motors. Use ICT to monitor, program and control their products.	create moving models. Understand and use a range of electrical systems in their products, such as series circuits, incorporating switches, bulbs, buzzers and motors. Apply their understanding of computing to program, monitor and control their products.
Cooking and nutrition	Understand which foods are healthy and which foods are treats. Suggest healthy dishes to prepare and make.	Understand what a healthy and varied diet is. Use knowledge of healthy eating to prepare dishes.	Understand what a healthy, varied and balanced diet is. Choose, prepare and cook dishes using some	Understand why we need to eat a healthy, varied and balanced diet. Understand why we need	Understand which foods will provide a healthy, varied and balanced diet. Understand which food groups help our	Understand and apply the principles of a healthy and varied diet. Understand which foods are sources of

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	Understand where some foods come from (meat, fruit and veg).	Understand where food comes from (plant or animal).	cooking techniques. Understand where fruit, vegetables, meat and meat products come from.	particular food groups. Choose, prepare and cook dishes using different cooking techniques. Know which foods can be grown or reared locally.	bodies to function. Prepare and cook a variety of dishes using different cooking techniques based on a specific audience. Understand why we can only grow some foods in our country and why we need to get some foods from other countries.	required nutrition (including minerals, vitamins, etc.) Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. Understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed.

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Foundation Stage – Reception - some of the wonderful things we do in D&T (EAD) at Penponds:

- Plan, do and review everything that we create.
- Create protective structures to protect Supertato from the Evil Pea, linking to our learning in Literacy. We throw paint covered peas at our structures to test how well they work.
- Build bug hotels around our school grounds to create homes for bugs.
- Make model vehicles and test them on a range of surfaces while exploring forces.
- During Own Learning time we use our imagination and a range of junk modelling resources to create items for a variety of purposes. Through this we develop our skills of joining items in a variety of ways.
- Identify properties of materials and identify what materials can be used for, e.g cardboard goes soggy when it is wet, paper is not very strong.

Reception - Yearly Overview –Skills and knowledge components: Progression document coverage

	Autumn – **Superheroes Assemble** (PSED/RE- people and communities)	Spring – **Let's Crawl** (Science- weather, wildlife, habitats & growing)	Summer – **On the Move** (History/Geography/Seaside Cornwall)
Design and Technology- Expressive Arts and Design	Makes something with clear intentions Makes something that they give meaning to Returns to work on another occasion to edit and improve Children work independently to develop basic skills Join items in a variety of ways – Sellotape, masking tape, string, ribbon Join items with glue or tape Knows how to secure boxes, toilet rolls, decorate bottles	Makes something with clear intentions Makes something that they give meaning to Children work independently to develop basic skills Join items in a variety of ways – Sellotape, masking tape, string, ribbon Builds models which replicate those in real life. Can use a variety of resources – loose part play Builds walls to create enclosed spaces	Skills Components: Makes something with clear intentions Makes something that they give meaning to Children work independently to develop basic skills Builds models which replicate those in real life. Can use a variety of resources – loose part play Creates collaboratively, sharing ideas with peers and developing skills further

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	Adds other materials to develop models (tissue paper, glitter…) Use glue spatulas with support Use glue sticks with support Use glue sticks and glue spatulas independently Knows how to improve models (scrunch, twist, fold, bend, roll) Product is all one texture Builds towers by stackings objects Returns to work on another occasion to edit and improve **Physical development-** Explore a range of tools e.g. spoons, spades, paintbrushes etc Use one handed tools- for example scissors to make snips in paper, hole punch etc Use scissors to cut paper in half. Use scissors to cut round a shape.	Builds simple models using walls, roofs and towers. Creates collaboratively, sharing ideas with peers and developing skills further Works with a friend, copying ideas and developing skills together Smooth, rough, bendy, hard, Weave (fine motor) **Physical development-** Explore a range of tools e.g. spoons, spades, paintbrushes etc Use one handed tools- for example scissors to make snips in paper, hole punch etc	Works with a friend, copying ideas and developing skills together Smooth, rough, bendy, hard, Weave (fine motor) Improved vocab – flexible, rigid Returns to work on another occasion to edit and improve **Physical development-** Explore a range of tools e.g. spoons, spades, paintbrushes etc Use one handed tools- for example scissors to make snips in paper, hole punch etc

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Year 1/2 Year A – some of the wonderful things we do in D&T at Penponds

- We always start with looking at and evaluating real products
- Create moving pictures to tell a story for young children
- Create structures and test properties of materials
- Evaluate recipes and present food in an interesting way

Year 1/2 - Yearly Overview Year A – National Curriculum and Skills and knowledge components: Progression document coverage

D&T	**Moving Pictures** A moving picture to illustrate a scene from the Mystery. Children learn to use levers and sliders to move part of their product. Children explore, use and evaluate using different materials to cut, shape, join together. • Make a Christmas stocking that holes a chocolate coin. National Curriculum objectives **Design** • design purposeful, functional, appealing products for themselves and other users based on design criteria • generate, develop, model and communicate their ideas through	**Goldilocks** Design a chair Goldilocks and the Three Bears | STEM children think like engineers in order to help Goldilocks build a chair that seats ALL the bears at once. First children find the problem that needs solving, then they come up with designs that can solve this. They consider the special features required by each of the bears and of the purpose of the chair. They then work together to build, test and improve their design. They communicate their findings explaining their reasons for the features of their design. National Curriculum objectives **Design** • design purposeful, functional, appealing products for	**Castle Kitchens** Children explore recipes from the past and the foods created for different events. Children design make and evaluate a mini banquet. To include menu, place mat and food. National Curriculum objectives **Cooking and Nutrition** • 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. • Pupils should be taught to:

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	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 **Evaluate** • explore and evaluate a range of existing products • evaluate their ideas and products against design criteria • Technical knowledge	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 **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.	• use the basic principles of a healthy and varied diet to prepare dishes • understand where food comes from
	Skills Components: Design and Technology Year 1	Skills Components: Year 1	Skills Components: Year 1

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	Design a functional product with a purpose for themselves and others. Draw and label pictures of their design ideas. Discuss their ideas and explain their choices. Name the tools they are using and know how to use them safely. Use given tools to cut, shape, join and finish products. Explore different materials and components to find ways of joining materials. Explore, investigate and use existing products. Say whether or not their product does the job it is supposed to. Explain why their product is good. **Year 2** Design an appealing and functional product with a purpose for themselves and others. Use a set of criteria to aid the design process. Draw, and make notes on, their design ideas. Explain what they are making, and what they will need to use. Select and name a range of tools and equipment Know which equipment is used for cutting, shaping, joining and finishing Select from a range of materials and components depending on use. Explore and evaluate existing products. Say why a product is good (or not) and what job it does Evaluate their product against their design criteria.	Design a functional product with a purpose for themselves and others. Draw and label pictures of their design ideas. Discuss their ideas and explain their choices. Name the tools they are using and know how to use them safely. Use given tools to cut, shape, join and finish products. Explore different materials and components to find ways of joining materials. Explore, investigate and use existing products. Say whether or not their product does the job it is supposed to. Explain why their product is good Build structures and explore how they can be made stiffer and stronger using a range of materials. **Year 2** Design an appealing and functional product with a purpose for themselves and others. Use a set of criteria to aid the design process. Draw, and make notes on, their design ideas. Explain what they are making, and what they will need to use. Select and name a range of tools and equipment Know which equipment is used for cutting, shaping, joining and finishing	Design a functional product with a purpose for themselves and others. Draw and label pictures of their design ideas. Discuss their ideas and explain their choices. Name the tools they are using and know how to use them safely. Explore different materials and components to find ways of joining materials. Explore, investigate and use existing products. Understand which foods are healthy and which foods are treats. Suggest healthy dishes to prepare and make. Understand where some foods come from (meat, fruit and veg). **Year 2** Design an appealing and functional product with a purpose for themselves and others. Use a set of criteria to aid the design process. Draw, and make notes on, their design ideas. Explain what they are making, and what they will need to use. Select and name a range of tools and equipment Know which equipment is used for cutting, shaping, joining and finishing Select from a range of materials and components depending on use. Explore and evaluate existing products. Say why a product is good (or not) and what job it does Evaluate their product against their design criteria. Understand what a healthy and varied diet is.

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	Build structures - investigate how they can be made stronger Explore different ways of joining similar materials together.	Select from a range of materials and components depending on use. Explore and evaluate existing products. Say why a product is good (or not) and what job it does Evaluate their product against their design criteria. Build structures - investigate how they can be made stronger, stiffer, more stable. Explore different ways of joining similar materials together.	Use knowledge of healthy eating to prepare dishes. Understand where food comes from (plant or animal).

Year 1/2 Year B – some of the wonderful things we do in D&T at Penponds

- Explore existing products and question why they are designed this waty
- Create and improve on existing recipes for yogurt

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- Design and make robotic models using different mechanisms
- Explore and use pneumatics to make things move

Year 1/2 - Yearly Overview Year B – National Curriculum and Skills and knowledge components: Progression document coverage

Design and Technology	**Yogurt Café** NC objectives: **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 **Cooking and Nutrition** ▯ use the basic principles of a healthy and varied diet to prepare dishes	**Space Robots** NC objectives: **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	**Moving Monsters (Plan Bee)** NC objectives: **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.

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	▯ understand where food comes from	▯ 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.	
	Sticky Knowledge Know how yogurt is made and flavoured List of fruits that come from the rainforest Examples of packaging	Sticky Knowledge Pictures of mechanisms that enable a robot to move e.g. hinged joint, wheel and axle.	Sticky Knowledge Examples of products that use air to change shape or move e.g. balloons, pumps, vacuum cleaner, bike tyres.
	Components: Year 1 Design a functional product with a purpose for themselves and others. Design a product to do a specific job. Draw and label pictures of their design ideas. Discuss their ideas and explain their choices. Name the tools they are using and know how to use them safely. Use given tools to cut, shape, join and finish products Explore different materials and components to find ways of joining materials Explore, investigate and use existing products. Say whether or not their product does the job it is supposed to. Explain why their product is good Build structures and explore how they can be made stiffer and stronger using a range of materials. Understand which foods are healthy and which foods are treats. Suggest healthy dishes to prepare and make. Understand where some foods come from (meat, fruit and veg).	Components: Year 1 Design a functional product with a purpose for themselves and others. Design a product to do a specific job. Draw and label pictures of their design ideas. Discuss their ideas and explain their choices. Name the tools they are using and know how to use them safely. Use given tools to cut, shape, join and finish products Explore different materials and components to find ways of joining materials Explore, investigate and use existing products. Say whether or not their product does the job it is supposed to. Explain why their product is good Build structures and explore how they can be made stiffer and stronger using a range of materials. Explore ways of joining cards to make it move (e.g. split pins). Create models with wheels and axels. Year 2	Components: Year 1 Design a functional product with a purpose for themselves and others. Design a product to do a specific job. Draw and label pictures of their design ideas. Discuss their ideas and explain their choices. Name the tools they are using and know how to use them safely. Use given tools to cut, shape, join and finish products Explore different materials and components to find ways of joining materials Explore, investigate and use existing products. Say whether or not their product does the job it is supposed to. Explain why their product is good Explore ways of joining cards to make it move (e.g. split pins). Create models with wheels and axels. Year 2 Design an appealing and functional product with a purpose for themselves and others. Use a set of criteria to aid the design process.

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	Year 2 Design an appealing and functional product with a purpose for themselves and others. Use a set of criteria to aid the design process. Draw, and make notes on, their design ideas. Explain what they are making, and what they will need to use. Select and name a range of tools and equipment Know which equipment is used for cutting, shaping, joining and finishing Select from a range of materials and components depending on use. Explore and evaluate existing products. Say why a product is good (or not) and what job it does Evaluate their product against their design criteria. Explore different ways of joining similar materials together. Explore and use levers and sliders to move part of their product. Understand what a healthy and varied diet is. Use knowledge of healthy eating to prepare dishes. Understand where food comes from (plant or animal).	Design an appealing and functional product with a purpose for themselves and others. Use a set of criteria to aid the design process. Draw, and make notes on, their design ideas. Explain what they are making, and what they will need to use. Select and name a range of tools and equipment Know which equipment is used for cutting, shaping, joining and finishing Select from a range of materials and components depending on use. Explore and evaluate existing products. Say why a product is good (or not) and what job it does Evaluate their product against their design criteria. Build structures - investigate how they can be made stronger, stiffer, more stable. Explore different ways of joining similar materials together. Create models with wheels, axels and hinges. Explore and use levers and sliders to move part of their product.	Draw, and make notes on, their design ideas. Explain what they are making, and what they will need to use. Select and name a range of tools and equipment Know which equipment is used for cutting, shaping, joining and finishing Select from a range of materials and components depending on use. Explore and evaluate existing products. Say why a product is good (or not) and what job it does Evaluate their product against their design criteria. Explore different ways of joining similar materials together.

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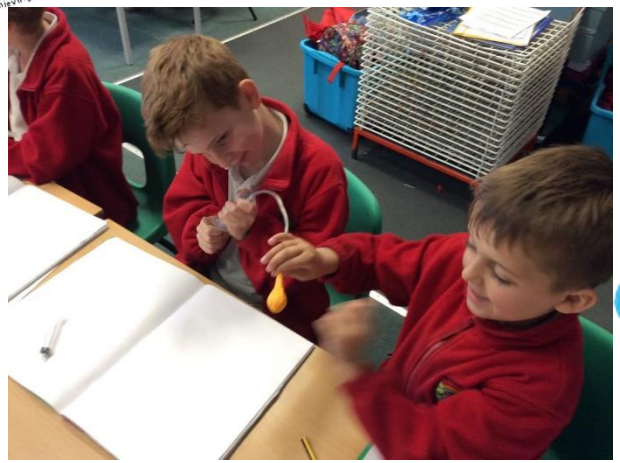

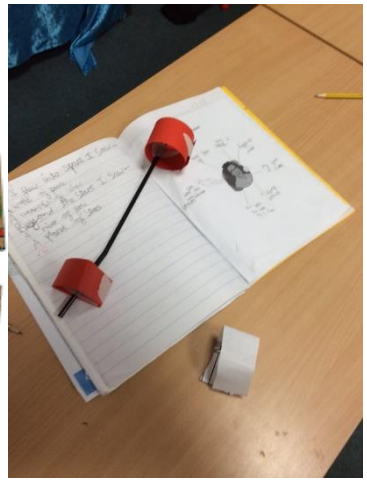

Year 3/4 Year A– some of the wonderful things we do in History at Penponds

- Explore and investigate types of packaging.
- Design and make packaging for a delicate Egyptian artefact.
- Carry out a survey to find out consumer preferences.
- Design and make a fruit smoothie.
- Follow instructions to build a catapult.
- Test the effectiveness of a product.
- Explore levers.

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Year 3/4 Year A - Yearly Overview – National Curriculum and Skills and knowledge components: Progression document coverage

D&T	NC objectives: Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups. Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]. Accurately select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities. Investigate and analyse a range of existing products.	NC objectives: Understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed. Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.	NC objectives: Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups. Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities. Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.

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	Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.	Understand and apply the principles of a healthy and varied diet. Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.	Understand how key events and individuals in design and technology have helped shape the world. Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages].
	Skills Components: Packaging a delicate artefact: KS2-Structures STEM T This unit looks at packaging, its design and uses, with children asked to design and make packaging for an artefact. It allows time for children to explore what packaging is and the requirements of different types of packages. It also let them practise skills including drawing, folding, scoring and cutting. * Look at different types of packaging. * Consider the need for packaging. * Look at the packaging when it is folded out into a flat sheet. * Design and make a package for an artefact using a cut and folded flat sheet of card. * Add surface decoration to their packaging. * Evaluate their design. Year 3 Design an appealing and functional product with a clear purpose and use for themselves and others. Sketch and label diagrams of their design ideas.	Skills Components: How Cool is your drink – smoothie making How Cool Is Your Drink? | STEM Children to devise and carry out a survey to find out what kind of preferences your consumer has. Next they research different types of smoothie and the ingredients that go into them. Choosing the correct equipment for cutting, slicing, squashing and blending, children create their smoothies. Once created, children can evaluate their final products from their own point of view and that of their consumers. After analysing feedback children can adapt their drinks to the identified needs. Year 3 Design an appealing and functional product with a clear purpose and use for themselves and others. Sketch and label diagrams of their design ideas. Discuss their ideas and explain the purpose, choice of materials, any necessary changes and how it will be made.	Skills Components: Catapult Catapult | STEM Children build their own Catapult, then see how far they can launch small objects. They are provided with step by step instructions to create a catapult using rubber bands and lollipop sticks, as well as considering how levers work. This activity supports learning about forces, providing an applied context for this area of science learning. Year 3 Design an appealing and functional product with a clear purpose and use for themselves and others. Sketch and label diagrams of their design ideas. Discuss their ideas and explain the purpose, choice of materials, any necessary changes and how it will be made. Explain what they are making, why they are making it and what they will need to use. Select and name appropriate tools and equipment needed from a suggested range.

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	Discuss their ideas and explain the purpose, choice of materials, any necessary changes and how it will be made. Explain what they are making, why they are making it and what they will need to use. Know and choose which equipment is used for cutting, shaping joining and finishing from a suggested range. Explore and analyse existing products. Consider why products are good (or not) and how effective they are at meeting their purpose. Suggest ways of improving their own and others' work. Explore how to make structures stronger, stiffer and more stable using more / other materials. Explore different ways of joining things together. Year 4 Design an appealing and functional product for a particular audience. Create design criteria for a product. Use sketches, labelled diagrams and notes to explain their design. Explain their ideas, the purpose, choice of materials, any necessary changes and how it will be made. Explain what they are making, why they are making it and what they will need to use, using the design criteria. Know and choose which equipment is used for cutting, shaping joining and finishing. Explore and analyse existing products against a set of criteria.	Explain what they are making, why they are making it and what they will need to use. Select and name appropriate tools and equipment needed from a suggested range. Explore and analyse existing products. Consider why products are good (or not) and how effective they are at meeting their purpose. Suggest ways of improving their own and others' work. Understand what a healthy, varied and balanced diet is. Choose, prepare and cook dishes using some cooking techniques. Understand where fruit, vegetables, meat and meat products come from. Year 4 Design an appealing and functional product for a particular audience. Create design criteria for a product. Use sketches, labelled diagrams and notes to explain their design. Explain their ideas, the purpose, choice of materials, any necessary changes and how it will be made. Explain what they are making, why they are making it and what they will need to use, using the design criteria. Select and name appropriate tools and equipment needed. Explore and analyse existing products against a set of criteria. Consider how products were made, why they are good (or not) and how effective they are at meeting their purpose.	Know and choose which equipment is used for cutting, shaping joining and finishing from a suggested range. Know some characteristics of materials and components and select from a wide range of these, depending on use. Suggest ways of improving their own and others' work. Consider how some products have helped the world. Explore how to make structures stronger, stiffer and more stable using more / other materials. Explore different ways of joining things together. Create models which use wheels, axels, hinges to make specific parts move. Year 4 Design an appealing and functional product for a particular audience. Create design criteria for a product. Use sketches, labelled diagrams and notes to explain their design. Explain their ideas, the purpose, choice of materials, any necessary changes and how it will be made. Explain what they are making, why they are making it and what they will need to use, using the design criteria. Select and name appropriate tools and equipment needed. Know and choose which equipment is used for cutting, shaping joining and finishing. Know the characteristics of materials and components and select, depending on use.

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	Consider how products were made, why they are good (or not) and how effective they are at meeting their purpose. Suggest ways of improving their own and others' work based on how effective the product is. Explore how to make structures stronger, stiffer and more stable using a variety of materials. Explore and different ways of joining things together (both moving joints and fixed joints).	Suggest ways of improving their own and others' work based on how effective the product is. Understand why we need to eat a healthy, varied and balanced diet. Understand why we need particular food groups. Choose, prepare and cook dishes using different cooking techniques. Know which foods can be grown or reared locally.	Consider how products were made, why they are good (or not) and how effective they are at meeting their purpose. Suggest ways of improving their own and others' work based on how effective the product is. Consider how some people and products have helped the world. Explore how to make structures stronger, stiffer and more stable using a variety of materials. Explore and different ways of joining things together (both moving joints and fixed joints). Create models which use wheels, axels, hinges and other moving parts.

Year 3/4 Year B– some of the wonderful things we do in D&T at Penponds

- Design, plan and create a meal for our class Maya festival.
- Design an earthquake resistant structure.
- Identify a need for earthquake resistant structures.
- Research current earthquake resistant structures and architecture.
- Create a vehicle to transport heavy stones to build Stonehenge.
- Learn about how wheels and axels work and test out a variety of wheels and axels to find out what works best.
- Test and evaluate finished work.

Year 3/4 Year B - Yearly Overview – National Curriculum and Skills and knowledge components: Progression document coverage

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D&T	NC objectives: Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups. Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], Accurately evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. Understand how key events and individuals in design and technology have helped shape the world. Understand and apply the principles of a healthy and varied diet. Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. Understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed.	NC objectives: Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups. Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities. 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. Understand how key events and individuals in design and technology have helped shape the world. Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.	NC objectives: Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups. Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities. 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. Understand how key events and individuals in design and technology have helped shape the world. Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages].

Design & Technology

	Skills Components: Create a Mayan meal for our class Mayan festival. Learn about types of food that the Maya ate and how it was prepared. Design and plan a meal for our end of unit Maya festival. Evaluate the food created. Year 3 Design an appealing and functional product with a clear purpose and use for themselves and others. Sketch and label diagrams of their design ideas. Discuss their ideas and explain the purpose, choice of materials, any necessary changes and how it will be made. Explain what they are making, why they are making it and what they will need to use. Select and name appropriate tools and equipment needed from a suggested range. Know and choose which equipment is used for cutting, shaping joining and finishing from a suggested range. Suggest ways of improving their own and others' work. Understand what a healthy, varied and balanced diet is. Choose, prepare and cook dishes using some cooking techniques. Understand where fruit, vegetables, meat and meat products come from. Year 4 Design an appealing and functional product for a particular audience. Create design criteria for a product.	Skills Components: Design an earthquake resistant structure. Identify a need for earthquake resistant structures. Research current earthquake resistant structures and architecture i.e. the Transamerica pyramid in San Francisco, the Yokohama landmark tower in Japan, the Beijing national stadium and the Japanese pagoda. Design a new structure using learnt ideas. Make a new structure. Test our new structure. Evaluate our structure design. Year 3 Design an appealing and functional product with a clear purpose and use for themselves and others. Sketch and label diagrams of their design ideas. Discuss their ideas and explain the purpose, choice of materials, any necessary changes and how it will be made. Explain what they are making, why they are making it and what they will need to use. Select and name appropriate tools and equipment needed from a suggested range. Know and choose which equipment is used for cutting, shaping joining and finishing from a suggested range. Know some characteristics of materials and components and select from a wide range of these, depending on use. Explore and analyse existing products. Consider why products are good (or not)	Skills Components: Create a vehicle to transport heavy stones to build Stonehenge. Learn about how wheels and axels work. Test out a variety of wheels and axels to find out what works best. Design and make a vehicle that can carry a stone. Test and evaluate finished vehicle. Year 3 Design an appealing and functional product with a clear purpose and use for themselves and others. Sketch and label diagrams of their design ideas. Discuss their ideas and explain the purpose, choice of materials, any necessary changes and how it will be made. Explain what they are making, why they are making it and what they will need to use. Select and name appropriate tools and equipment needed from a suggested range. Know and choose which equipment is used for cutting, shaping joining and finishing from a suggested range. Know some characteristics of materials and components and select from a wide range of these, depending on use. Explore and analyse existing products. Consider why products are good (or not) and how effective they are at meeting their purpose. Suggest ways of improving their own and others' work. Consider how some products have helped the world.

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	Use sketches, labelled diagrams and notes to explain their design. Explain their ideas, the purpose, choice of materials, any necessary changes and how it will be made. Explain what they are making, why they are making it and what they will need to use, using the design criteria. Select and name appropriate tools and equipment needed Know and choose which equipment is used for cutting, shaping joining and finishing. Explore and analyse existing products against a set of criteria. Consider how products were made, why they are good (or not) and how effective they are at meeting their purpose. Suggest ways of improving their own and others' work based on how effective the product is. Understand why we need to eat a healthy, varied and balanced diet. Understand why we need particular food groups. Choose, prepare and cook dishes using different cooking techniques. Know which foods can be grown or reared locally.	and how effective they are at meeting their purpose. Suggest ways of improving their own and others' work. Consider how some products have helped the world. Explore how to make structures stronger, stiffer and more stable using more / other materials. Explore different ways of joining things together. Year 4 Design an appealing and functional product for a particular audience. Create design criteria for a product. Use sketches, labelled diagrams and notes to explain their design. Explain their ideas, the purpose, choice of materials, any necessary changes and how it will be made. Explain what they are making, why they are making it and what they will need to use, using the design criteria. Select and name appropriate tools and equipment needed. Know and choose which equipment is used for cutting, shaping joining and finishing. Know the characteristics of materials and components and select, depending on use. Explore and analyse existing products against a set of criteria. Consider how products were made, why they are good (or not) and how effective they are at meeting their purpose.	Explore how to make structures stronger, stiffer and more stable using more / other materials. Explore different ways of joining things together. Create models which use wheels, axels, hinges to make specific parts move. Year 4 Design an appealing and functional product for a particular audience. Create design criteria for a product. Use sketches, labelled diagrams and notes to explain their design. Explain their ideas, the purpose, choice of materials, any necessary changes and how it will be made. Explain what they are making, why they are making it and what they will need to use, using the design criteria. Select and name appropriate tools and equipment needed. Know and choose which equipment is used for cutting, shaping joining and finishing. Know the characteristics of materials and components and select, depending on use. Explore and analyse existing products against a set of criteria. Consider how products were made, why they are good (or not) and how effective they are at meeting their purpose. Suggest ways of improving their own and others' work based on how effective the product is. Consider how some people and products have helped the world.

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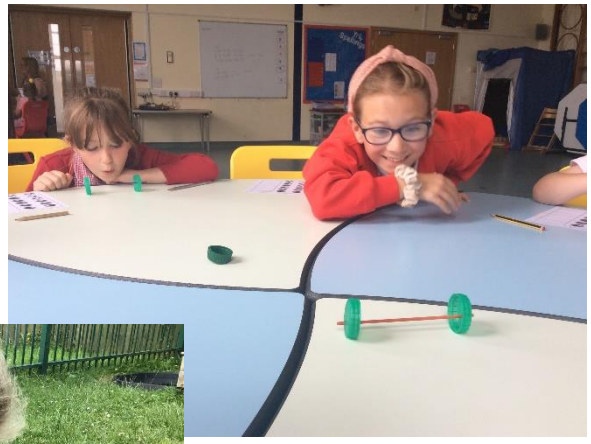
		Suggest ways of improving their own and others' work based on how effective the product is. Consider how some people and products have helped the world. Explore how to make structures stronger, stiffer and more stable using a variety of materials. Explore and different ways of joining things together (both moving joints and fixed joints).	Explore how to make structures stronger, stiffer and more stable using a variety of materials. Explore and different ways of joining things together (both moving joints and fixed joints). Create models which use wheels, axels, hinges and other moving parts for a specific purpose.



Design & Technology

Year 5/6 Year A– some of the wonderful things we do in D&T at Penponds

- Design, plan and create a Greek style meal (kebab)
- Design three-legged stool.
- Use green wood working tools and techniques to create a model stool.
- Research boat design, particularly keel and width.
- Create a model Viking longboat.
- Test and evaluate finished work.

Year 5/6 Year A - Yearly Overview – National Curriculum and Skills and knowledge components: Progression document coverage

D&T	NC objectives: Understand and apply the principles of a healthy and varied diet. Understand which foods are sources of required nutrition (including minerals, vitamins, etc.) Research existing products to inform design choices and criteria, taking into consideration user needs. Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. Understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed.	NC objectives: 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 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 Explore and evaluate a range of existing products	NC objectives: 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 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.

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		Evaluate their ideas and products against design criteria	
	Skills Components: Understand which foods will provide a healthy, varied and balanced diet. Understand which food groups help our bodies to function. Prepare and cook a variety of dishes using different cooking techniques based on a specific audience. Understand why we can only grow some foods in our country and why we need to get some foods from other countries. Understand and apply the principles of a healthy and varied diet. Understand which foods are sources of required nutrition (including minerals, vitamins, etc.) Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. Understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed.	Skills Components: Design innovative, functional, appealing products aimed at particular individuals or groups. Develop a set of criteria, based on research, to aid design process. Communicate ideas through oral and ICT presentations. Adapt designs, where necessary, based on design feedback. Select from and use a wide range of specialist tools and equipment safely and accurately. Use specialist equipment for a specific purpose safely and accurately. Select from and use a wide range of specific materials and components according to their specific use and aesthetic properties.	Skills Components: Investigate and explore a range of existing products, considering construction and purpose. Evaluate ideas, prototypes and products against a specific set of devised criteria. Communicate ideas by using cross-sectional diagrams, exploded diagrams, prototypes, pattern ideas and computer-aided design Suggest ways of improving own and others' work, using specific criteria. (Viking boat design project)

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Year 5/6 Year B– some of the wonderful things we do in D&T at Penponds

- Combine prior learning about electricity and computing to create a morse code machine.
- Design and launch a rocket capable of sending a raw egg in to space – and returning to the ground safely.
- Research materials suitable for bridge design.
- Design and build a model of the Clifton Suspension bridge.
- Test and evaluate finished work.

Year 5/6 Year B - Yearly Overview – National Curriculum and Skills and knowledge components: Progression document coverage

D&T	NC objectives: Understand and use a range of electrical systems in their products, such as series circuits, incorporating switches, bulbs, buzzers and motors. Apply their understanding of computing to program, monitor and control their products.	NC objectives: Research existing products to inform design choices and criteria, taking into consideration user needs. Design innovative, functional, appealing products aimed at particular individuals or groups. Develop a set of criteria, based on research, to aid design process. Communicate ideas by using cross-sectional diagrams, exploded diagrams, prototypes, pattern ideas and computer-aided design. Communicate ideas through oral and ICT presentations. Adapt designs, where necessary, based of design feedback.	NC objectives: Identify and understand how key events and individuals in design and technology have helped shape the world. Design and build more complex frameworks, using a range of materials to support mechanisms. Apply understanding of how to strengthen, stiffen and reinforce more complex structures. Understand and use CAM mechanisms to create moving models. (Isambard Kingdom Brunel – design and building bridges challenge) Adapt designs, where necessary, based of design feedback.

Design & Technology

		Select from and use a wide range of specialist tools and equipment safely and accurately. Use specialist equipment for a specific purpose safely and accurately. Select from and use a wide range of specific materials and components according to their specific use and aesthetic properties.	
	Skills Components: understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] apply their understanding of computing to program, monitor and control their products.	Skills Components: use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design	Skills Components: 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 understand how key events and individuals in design and technology have helped shape the world apply their understanding of how to strengthen, stiffen and reinforce more complex structures understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]

Strategies for supporting pupils with Special Educational Needs and Disabilities in Design & Technology lessons.

	Here's how we will help.
Attention Deficit Hyperactivity Disorder	• Praise positive behaviour at each step to encourage lowself-esteem. • Ensure clear instructions are given throughout the lesson. • Provide time limited learning breaks. • Ensure step by step instructions are given, so each childknows what part of the lesson they are working on. (Forexample, the design, the creation or the evaluation) • Provide additional time for pupils to express their ideasbefore the lesson with a pre-teach where appropriate. • Provide D&T tools when necessary to avoid distractions during teacher input.
Anxiety	• Ensure the child knows the support available on offer before the lesson begins. • Provide lots of opportunities to ask questions to clarifythinking and ideas during the lesson. • Teach problem solving before the lesson, and strategiesto overcome problems that might be faced in these subjects. • Model how to use D&T tools before setting the work. • Use a 'Now and Next' board to explain any changes to theroutine, for example if a child will be sitting somewhere else to complete group work, manage this before it happens.

Autism Spectrum Disorder	• Use a visual timetable so the child knows what is happening at each stage of the day. • Understand if your child is hypo-sensitive or hyper- sensitive and how they will manage the sensory work youare asking them to partake in. • Provide materials and textures that they can use and understand this information before the lesson. • Avoid changing seating plans. • Ensure outcomes are clear, with a clear end point to the lesson, so children know when they have reached this. • Use simple, specific instructions that are clear to understand. • Understand your student's skills, and where their starting • place is.

Dyscalculia	• Provide concrete resources to help with mathematical equations, drawing to scale and planning D&T projects. • Make a resource box for different D&T project stages. • Use technology available during the design process if required. • Ensure the child knows the support available on offerbefore the lesson begins. • Provide electric measuring tools for cooking to aid independence.
Dyslexia	• Use simple, specific instructions that are clear to understand. • Pre-teach vocabulary linked to D&T that will help the child to succeed in the lesson like planning, designing andevaluating. • Differentiate the Learning Intention so the child understands what is being asked of them. • Model how to use D&T tools before setting the work.
Dyspraxia	• Make the most of large spaces before starting projects. • Provide looped scissors if needed. • Ensure the tools you are using are accessible to the child i.e rulers with handles. • Provide a lesson breakdown, with a clear end, a tick listmight be beneficial. • Provide an equipment list, words, or visuals, with the toolsand materials needed during the lesson. • Model how to use D&T tools before setting the work. • Differentiate the size and scale of a project and its end result.

Hearing Impairment	• Make sure instructions are clear and concise, in case thechild lip reads, and in case of an emergency. • Give instructions when the room is quieter, and be mindful of additional noise when cooking, or using loud tools like hammers. • Pre-teach vocabulary linked to D&T that will help the child tosucceed in the lesson like planning, designing and evaluating. • Try and arrange tables in a circular shape. • Provide sign language visuals where possible.

Toileting Issues	• Encourage children to use the toilet before working on a project, as they may feel this isn't as easy when they arewearing protective clothes and covered in clay/glue/cooking ingredients etc. • Encourage children to wear protective clothes that make access to the bathroom manageable.
Cognition and Learning Challenges	• Use visuals to break each stage of the design processdown into clear, manageable tasks. • Use language that is understood by the child, or takethe time to pre-teach language concepts including design, develop and evaluate. • Provide resource lists with visuals so children know what resources they need for an activity and can beginto access these independently. • Model how to use D&T tools before setting the work. • Physically demonstrate the lesson and the expectations include designing, making and evaluatingwhere possible. • Support children with their organisation in the lesson, especially when cooking to make sure they do not default from the final product. • When cooking, or making something provide checklists which can be ticked off.
Speech, Language & Communication Needs	• Provide instruction that are clear, concise and match the language of the child, delivering these instructionsslowly. • Use a visual timetable where necessary. • Use visuals on resource lists. • Use visuals on resource boxes so children know whichone to access. • Encourage designs and evaluations to be done using pictures and child's voice where possible and then recorded by an adult.

Tourette Syndrome	• Provide short, simple clear instructions. • Try and keep the children calm in a lesson, althoughD&T can be exciting, as this can lead to a tic. • Provide additional support with cutting, using looped scissors and handled rulers.
Experienced Trauma	• Provide opportunities to be curious and explore the toolsand resources that children will use. • Use simple, specific instructions that are clear to understand, and deliver these slowly. Slowly build up the tools a child can use, as they becomemore confident in their work, especially in regard to cooking. • Model and remind children behavioural expectations whenusing tools including clay and cooking, and safe ways of using these including health and hygiene. Use visuals if needed. • Before the lesson, come up with strategies for if difficulties occur during the lesson, and ways these canbe overcome, reminding children that D&T is about trial • and error.

Visual Impairment	• Make sure you have the child's attention before giving instructions. • Encourage children to verbalise their design and evaluation as well as their thoughts and feelings if possible. • Make sure resources are well organised and not cluttered. • When drawing designs or writing evaluations, provide thicker, dark pencils to write with. • Provide enlarged examples of the work to be completed. • Provide children with additional time when exploring new textures and materials.