

Design and Technology Curriculum Overview



The vision for Design and Technology (DT) at Reach Academy is to develop pupils' ability to design, make and evaluate, finding solutions through practical exploration.

To ensure our pupils can go on to live a life of choice and opportunity, our curriculum is backwards planned so, we expose pupils to the many facets of the designed and made world and give them lots of opportunities to practise and apply their skills. We aim to develop an inquisitive and resourceful mindset that will enable them to live a life of choice and opportunity.

We live in an ever-changing world, fuelled by technology and innovation. The study of design technology teaches children to use their creativity and imagination. It gives children the chance to solve real and relevant problems through a creative process with the appropriate structure. We are confident that our DT programme at Reach Academy will provide our pupils with a strong foundation in the skills and knowledge they need, whether they go on to pursue further study in DT or any of the many careers which are underpinned by the design, make, evaluate cycle, we believe that our DT curriculum will give them the confidence and skills they need to pursue their passions and live a life of choice and opportunity.

1. Knowledge-rich: Design and Technology is an innately practical subject which should be grounded in real world problems and solutions. There is a core body of knowledge that we know can enable designers to produce more effective products and techniques that are best suited to certain tasks. Our curriculum aims to ensure pupils learn these core ideas, such as different stitch types in textiles, and teach them the skills to apply this knowledge effectively. As a practical subject, an element of trial and error is needed; however, this must be underpinned by rigorous evaluation of ideas. Pupils revisit each strand of study over time and the sequence of learning enables pupils to revisit learning and teachers can effectively stretch and support pupils.

2. Backwards planned: As part of our backwards planned curriculum, the principles of design and technology are embedded in the Early Years Foundation Stage, as pupils explore different designs for building structures through play, evaluate what is working and what is not, and try different approaches. In primary, our curriculum is based on units provided by Kapow, who have worked with the Design and Technology Association to ensure our pupils have a broad and balanced curriculum with the opportunity to learn and practise a wide range of skills that build upon each other. The program is structured around four main areas of study: cooking and nutrition, mechanisms, structures, and textiles, and is taught across three half terms of the academic year that ensures progression of skills, and follows a sequence to build on previous learning that provides both support and challenge for learners.

In Years 7 & 8, our DT curriculum focuses on Food Technology. Taking greater advantage of our dedicated Food Tech lab, we know how important it is that our students learn to prepare and cook a variety of healthy meals that meet their nutritional needs. To live a life of choice and opportunity, we prepare our students to be able to cook for themselves at university and away from home. By focussing on this in Years 7 & 8, when pupils have been exposed to Cooking and Nutrition units during their primary studies, we deepen their knowledge and understanding. Pupils start to explore a wider range of recipes and techniques that build upon their existing knowledge, for example by learning how to use different types of grips (claw and bridge) when handling a knife to produce different effects when preparing food and vegetables, and changing taste and aroma with the addition of spices using soup as the base meal. We make links across the curriculum, especially in Science and PE to ensure pupils understand the wider impact of diet and how this can impact their lives and performance, and these links continue where appropriate into Phase 4 and 5, as well as through our Team Reach curriculum when we cover healthy eating as part of the Health and Wellbeing strand.

3. Carefully resourced: Thorough and careful resourcing is at the heart of any strong Design and Technology programme. We begin by considering what the key ideas of successful designers are and how we want pupils to be exposed to these and we think carefully about what physical resources our pupils will need to design and make their products. By focussing on cooking and nutrition, mechanisms, structures, and textiles, pupils have the opportunity to experiment with different mediums and techniques over the course of their DT study. As pupils move through the school, we use our dedicated Food Tech lab to ensure they have access to specialist resources appropriate to their unit of study, which will allow them to access more complex units of work

4. Aspirational, inclusive and diverse: We support and ensure our curriculum is inclusive for pupils with a range of needs first and foremost through high quality teaching: this means explicit instruction, scaffolding, and adapting teaching according to assessment for learning to help more pupils learn. Where pupils need scaffolding, we plan carefully for how they can be helped to access the learning in an environment where they can succeed in exploring the design, make and evaluate process.

Aspiration in our curriculum is seen in our high expectations of pupils, through the products they produce and the feedback they receive on how to improve their work. Pupils evaluate their work and that of their peers so that they can consistently improve their skills.

The core knowledge and the examples that pupils are exposed to come from a range of cultures and areas of the world, discussing how design principles have changed and developed over time and how they have stayed the same. Linking to our Team Reach curriculum, we also discuss a wide range of careers that involve the design, make and evaluation process and the diversity these careers entail.

5. Rigorously assessed: An important part of every child's life at Reach is the opportunity to reflect upon their work and their progress. In DT this is demonstrated through the creation of their creative portfolios, in which pupils reflect upon the choices they made in the creation of their products, why they made these choices and what they might do differently next time. Pupils are encouraged to share their work with others and use their portfolios to aid them in confidently talking about their work with peers and adults. The opportunity to consolidate the knowledge about the designed, man-made world and how this applies to their own learning about DT over time is crucial in enabling pupils to progress. We encourage pupils to enthusiastically ask questions and find practical solutions as they continue the cycle of design, make and evaluate. At the end of each unit, pupils also complete knowledge quizzes focussed on the core body of knowledge that we know can enable designers to produce more effective products and techniques that are best suited to certain tasks.

6. Regularly evaluated and reflected upon: At Reach Academy, we continually adapt and improve our resources for the teaching of Design & Technology each year. All plans and accompanying materials are saved on a central drive system so that teachers can edit and improve materials from the previous years and respond to the needs of the cohort they are teaching. Based on what is working well, the support and stretch that pupils need, we adapt the resources we order so that they can effectively design, make and evaluate. We use the creative portfolios and knowledge quizzes alongside final pieces to help us evaluate how successful our curriculum is and how we need to adapt it moving forward.

Curriculum Maps

	Half Term One	Half Term Two	Half Term Three
Year 1	Mechanisms Moving story book	Structures Windmills	Cooking and Nutrition Fruit and Veg
Year 2	Mechanisms Making a moving monster	Textiles Pouches	Cooking and Nutrition Balanced diet
Year 3	Structures Castles	Mechanisms Pneumatic toys	Textiles Cushion
Year 4	Textiles (Fastenings)	Cooking and Nutrition Adapting a recipe	Mechanisms Slingshot cars
Year 5	Structures Bridges	Textiles Stuffed Toys	Mechanisms Making a Pop Up Book

Y6 pupils do DT for one cycle (20 pupils at a time) for two lessons a week and cover four units:

Year 6	Cooking & Nutrition Creating a three course meal	Structures Playgrounds	Electrical systems Steady hand game	Textiles Waistcoat
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Year 7 & 8 Food Technology:

	Skill Group	Techniques
1.	Knife skills	<ul style="list-style-type: none"> • Meat and fish – fillet a chicken breast, portion a chicken, remove fat and rind, fillet fish, slice raw and cooked meat and fish evenly and accurately • Fruits and vegetables – bridge hold, claw grip, peel, slice, dice and cut into even size pieces (ie batons, julienne)
2.	Prepare fruits and vegetables	<ul style="list-style-type: none"> • Mash, shred, scissor snip, scoop, crush, grate, peel, segment, de-skin, de-seed, blanch, shape, pipe, blend, juice and prepare garnishes whilst demonstrating the technical skills of controlling enzymic browning and spoilage and preventing food poisoning (wash and dry, where appropriate)
3.	Prepare combine and shape meat, fish and alternatives	<ul style="list-style-type: none"> • Roll, wrap, skewer, mix, coat, layer meat and fish, and shape and bind wet mixtures (such as fishcakes or meatballs) while demonstrating the technical skill of preventing cross contamination and handle high risk foods correctly
4.	Tenderise and marinate	<ul style="list-style-type: none"> • Demonstrate how acids denature protein and marinades add flavour and moisture when preparing meat, fish, vegetables and meat alternatives
5.	Select and adjust a cooking process	<ul style="list-style-type: none"> • Choose and adjust the cooking process and length of time to match the cut of meat/fish
6.	Weigh and measure	<ul style="list-style-type: none"> • Demonstrate accurate measurement of liquids and solids
7.	Preparation of ingredients and equipment	<ul style="list-style-type: none"> • Grease/oil, line, flour, evenly and with attention to finished product
8.	Use of equipment	<ul style="list-style-type: none"> • Use the blender, food processor, mixer and microwave
9.	Water-based methods that use the hob	<ul style="list-style-type: none"> • Steaming • Boiling and simmering • Blanching • Poaching

10.	Dry heat and fat-based methods that use the hob	<ul style="list-style-type: none"> • Dry frying • Pan (shallow frying) • Stir fry
11.	Using the grill	<ul style="list-style-type: none"> • Demonstrate for vegetables, meat, fish and other foods such as halloumi, seeds and nuts • Char • Grill or toast
12.	Using the oven	<ul style="list-style-type: none"> • Baking • Roasting • Casserole/tagines • Braising
13.	Make sauces	<ul style="list-style-type: none"> • Make a blended white sauce (starch gelatinisation): demonstrate understanding of how liquid/starch ratios effect the viscosity and how conduction and convection work to cook the sauce and the need to agitation. Roux and all-in-one blended sauce, infused sauce, veloute, bechamel • Make a reduction sauce, demonstrate how evaporation concentrates flavour and changes the viscosity of the sauce • Pasta sauce, curry sauce, gravy, meat sauce (including meat alternatives such as myco-protein and TVP) • Make an emulsion sauce: demonstrate the technical skill of how to make a stabilised emulsion such as a salad dressing, mayonnaise, hollandaise • Demonstrate how sauces can improve flavour, texture and balance of an overall dish
14.	Set a mixture - removal of heat (gelation)	<ul style="list-style-type: none"> • Use starch to set a mixture on chilling – layered desserts, custard, cheesecake
15.	Set a mixture - heating (coagulation)	<ul style="list-style-type: none"> • Use protein to set a mixture on heating – (denatured protein in eggs for quiche, choux pastry)
16.	Use of raising agents	<ul style="list-style-type: none"> • Demonstrate each of the following techniques: <ul style="list-style-type: none"> a) Use egg (colloid foam) as a raising agent – create air in liquid foam – whisking egg whites, whisked sponge

		<p>b) Use chemical raising agents – self-raising flour, baking powder</p> <p>c) Use steam in a mixture (choux pastry, batter)</p>
17.	Make a dough	<ul style="list-style-type: none"> • Demonstrate the technical skills of shortening, gluten formation, fermentation (proving). Bread, pastry, pasta
18.	Shaping and finishing a dough	<ul style="list-style-type: none"> • Roll out pastry, use a pasta machine, line a flan ring, create layers, (palmiers), proving/resting, pipe choux pastry, make bread roll shapes, flatbreads, pinwheels, pizza, calzone. Glaze and finish
19.	Test for doneness	<ul style="list-style-type: none"> • Demonstrate ability to use a temperature probe, knife/skewer, finger or 'poke' test, 'bite', visual colour check or sound to establish whether an ingredient or recipe is ready
20.	Judge and manipulate sensory properties	<ul style="list-style-type: none"> • Demonstrate how to taste and season during the cooking process • Change the taste and aroma through the use of infusions, herbs and spices, paste, jus, reduction • Demonstrate how to change texture and flavour, use browning (dextrinisation) and glazing, add crust, crisp and crumbs • Presentation and food styling – use garnishes and decorative techniques to improve the aesthetic qualities, demonstrate portioning and presenting