Widnes Academy
Design Technology
Progression of Skills

Design Technology – Early Years Foundation Stage and The National Curriculum
By the end of each Key Stage, children are expected to:

EYFS	KS1	KS2
Through a variety of creative and practical activities children will develop fundamental skills needed to be able to access design and technology lessons in KS1 and KS2. Children at the expected level of development will: Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function; Share their creations, explaining the process they have used; Make use of props and materials when role playing characters in narratives and stories. Use a range of small tools, including scissors, paint brushes and cutlery; Begin to show accuracy and care when drawing.	Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts, such as the home and school, gardens and playgrounds, the local community, industry and the wider environment. *pupils should be taught to:* 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]	Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment]. *pupils should be taught to:* Design • 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 Make • 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 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.	• 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 • 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 Technical knowledge • 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] • 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.

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design	Select appropriate resources Use gestures, talking and arrangements of materials and components to show design Use contexts set by the teacher and myself Use language of designing and making (join, build, shape, longer, shorter, heavier etc.)	Have own ideas explain what I want to do explain what my product is for, and how it will work use pictures and words to plan, begin to use models design a product for myself following design criteria research similar existing products	Have own ideas and plan what to do next Explain what I want to do and describe how I may do it explain purpose of product, how it will work and how it will be suitable for the user Describe design using pictures, words, models, diagrams, begin to use ICT design products for myself and others following design criteria Choose best tools and materials, and explain choices use knowledge of existing products to produce ideas	Begin to research others' needs show design meets a range of requirements describe purpose of product follow a given design criteria have at least one idea about how to create product create a plan which shows order, equipment and tools describe design using an accurately labelled sketch and words make design decisions explain how product will work make a prototype	Use research for design ideas Show design meets a range of requirements and is fit for purpose Begin to create own design criteria have at least one idea about how to create product and suggest improvements for design. produce a plan and explain it to others say how realistic plan is include an annotated sketch make and explain design decisions considering availability of resources explain how product will work make a prototype begin to use computers to show design.	use internet and questionnaires for research and design ideas *take a user's view into account when designing begin to consider needs/wants of individuals/groups when designing and ensure product is fit for purpose create own design criteria have a range of ideas produce a logical, realistic plan and explain it to others. use cross-sectional planning and annotated sketches make design decisions considering time and resources. clearly explain how	draw on market research to inform design use research of user's individual needs, wants, requirements for design identify features of design that will appeal to the intended user create own design criteria and specification * come up with innovative design ideas follow and refine a logical plan. use annotated sketches, cross-sectional planning and exploded diagrams make design decisions, considering,

				begin to use computers to show design		parts of product will work model and refine design ideas by making prototypes and using pattern pieces use computer-aided designs	resources and cost clearly explain how parts of design will work, and how they are fit for purpose independently model and refine design ideas by making prototypes and using pattern pieces use computer-aided designs
Make	Construct with a purpose, using a variety of resources Use simple tools and techniques *Build / construct with a wide range of objects Select tools & techniques to shape,	explain what I'm making and why consider what I need to do next select tools/equipment to cut, shape, join, finish and explain choices measure, mark out, cut and	explain what I am making and why it fits the purpose *make suggestions as to what I need to do next. join materials/components together in different ways measure, mark out, cut and shape materials and components, with support.	select suitable tools/equipment, explain choices; begin to use them accurately select appropriate materials, fit for purpose. Work through plan in order consider how good product will be begin to measure, mark out, cut and	select suitable tools and equipment, explain choices in relation to required techniques and use accurately select appropriate materials, fit for purpose; explain choices * work through plan in order. realise if product is going to be good quality measure, mark out, cut and shape materials/components with some accuracy	use selected tools/equipment with good level of precision produce suitable lists of tools, equipment/materials needed select appropriate materials, fit for purpose; explain choices, considering functionality create and follow	use selected tools and equipment precisely produce suitable lists of tools, equipment, materials needed, considering constraints select appropriate materials, fit for purpose; explain choices, considering functionality and aesthetics

	assemble and join Replicate structures with materials / components Discuss how to make an activity safe and hygienic Record experiences by drawing, writing, voice recording Understand different media can be combined for a purpose	shape, with support choose suitable materials and explain choices try to use finishing techniques to make product look good work in a safe and hygienic manner	describe which tools I'm using and why choose suitable materials and explain choices depending on characteristics. use finishing techniques to make product look good work safely and hygienically	shape materials/components with some accuracy begin to assemble, join and combine materials and components with some accuracy begin to apply a range of finishing techniques with some accuracy	assemble, join and combine materials and components with some accuracy apply a range of finishing techniques with some accuracy	detailed step- by-step plan explain how product will appeal to an audience mainly accurately measure, mark out, cut and shape materials/components mainly accurately assemble, join and combine materials/components mainly accurately apply a range of finishing techniques use techniques that involve a small number of steps begin to be resourceful with practical problems	create, follow, and adapt detailed step-by-step plans explain how product will appeal to audience; make changes to improve quality accurately measure, mark out, cut and shape materials/components accurately assemble, join and combine materials/components accurately apply a range of finishing techniques use techniques that involve a number of steps be resourceful with practical problems

Evaluate	Adapt work if necessary Dismantle, examine, talk about existing objects/structures Consider and manage some risks Practise some appropriate safety measures independently Talk about how things work Look at similarities and differences between existing objects / materials / tools Show an interest in technological toys	talk about my work, linking it to what I was asked to do talk about existing products considering: use, materials, how they work, audience, where they might be used talk about existing products, and say what is and isn't good talk about things that other people have made begin to talk about what could make product better	describe what went well, thinking about design criteria talk about existing products considering: use, materials, how they work, audience, where they might be used; express personal opinion evaluate how good existing products are talk about what I would do differently if I were to do it again and why	look at design criteria while designing and making use design criteria to evaluate finished product say what I would change to make design better begin to evaluate existing products, considering: how well they have been made, materials, whether they work, how they have been made, fit for purpose begin to understand by whom, when and where products were designed learn about some inventors/designers / engineers/chefs/ manufacturers of	refer to design criteria while designing and making use criteria to evaluate product begin to explain how I could improve original design evaluate existing products, considering: how well they've been made, materials, whether they work, how they have been made, fit for purpose Discuss by whom, when and where products were designed Research whether products can be recycled or reused Know about some inventors/designers/ engineers/chefs/manufacturers of ground-breaking products	evaluate quality of design while designing and making evaluate ideas and finished product against specification, considering purpose and appearance. test and evaluate final product evaluate and discuss existing products, considering: how well they've been made, materials, whether they work, how they have been made, fit for purpose begin to evaluate how much products cost to make and how innovative they are	evaluate quality of design while designing and making; is it fit for purpose? keep checking design is best it can be. evaluate ideas and finished product against specification, stating if it's fit for purpose test and evaluate final product; explain what would improve it and the effect different resources may have had do thorough evaluations of existing products considering: how well they've been made, materials, whether they work, how they've been made, fit for purpose

	Describe textures			ground- breaking products		research how sustainable materials are talk about some key inventors/designers / engineers/ chefs/manufacturers of ground-breaking products	evaluate how much products cost to make and how innovative they are research and discuss how sustainable materials are consider the impact of products beyond their intended purpose discuss some key inventors/designers / engineers/ chefs/manufacturers of ground-breaking products
Technical Knowledge - structures	Experience of using construction kits to build walls, towers and frameworks. Experience of using of basic tools e.g. scissors or hole punches with	begin to measure and join materials, with some support describe differences in materials suggest ways to make	measure materials describe some different characteristics of materials join materials in different ways use joining, rolling or folding to make it stronger	use appropriate materials work accurately to make cuts and holes join materials begin to make strong structures	measure carefully to avoid mistakes attempt to make product strong continue working on product even if original didn't work	select materials carefully, considering intended use of product and appearance explain how product meets design criteria measure accurately enough to ensure	select materials carefully, considering intended use of the product, the aesthetics and functionality. explain how product meets design criteria

	construction materials e.g. plastic, card. Experience of different methods of joining card and paper.	material/product stronger	use own ideas to try to make product stronger		make a strong, stiff structure	precision ensure product is strong and fit for purpose begin to reinforce and strengthen a 3D frame	reinforce and strengthen a 3D frame
Technical Knowledge - Mechanisms	Early experiences of working with paper and card to make simple flaps and hinges. Experience of simple cutting, shaping and joining skills using scissors, glue, paper fasteners and masking tape. Assembled vehicles with moving wheels using construction kits.	Learning that levers and sliders are mechanisms and can make things move Identifying whether a mechanism is a lever or slider and determining what movement the mechanism will make Using the vocabulary: up, down, left, right, vertical and horizontal	Learning that mechanisms are a collection of moving parts that work together in a machine Learning that there is an input and output in a mechanism Identifying mechanisms in everyday objects Learning that a lever is something that turns on a pivot Learning that a linkage is a system of levers that are	Understanding how pneumatic systems work Learning that mechanisms are a system of parts that work together to create motion Understanding that pneumatic systems can be used as part of a mechanism Learning that pneumatic systems force air over a distance to create movement	Learning that products change and evolve over time Learning that all moving things have kinetic energy Understanding that kinetic energy is the energy that something (object person) has by being in motion	Knowing that an input is the motion used to start a mechanism Knowing that output is the motion that happens as a result of starting the input Knowing that mechanisms control movement Describing mechanisms that can be used to change one kind of motion into another	Using a bench hook to saw safely and effectively Exploring cams, learning that different shaped cams produce different follower movements Exploring types of motions and direction of a motion

	Explore moving vehicles through play. Gained some experience of designing, making and evaluating products for a specified user and purpose. Developed some cutting, joining and finishing skills with card.	to describe movement Identifying what mechanism makes a toy or vehicle roll forwards Learning that for a wheel to move it must be attached to an axle	connected by pivots Exploring wheel mechanisms Learning how axels help wheels to move a vehicle				
Technical Knowledge - Textiles	Explored and used different fabrics. Cut and joined fabrics with simple techniques. Thought about the user and purpose of products.	Learning different ways in which to join fabrics together: pinning, stapling, gluing	joining items using fabric glue or stitching Identifying benefits of these techniques Threading a needle Sewing running stitch, with evenly spaced, neat, even stitches to join fabric	Threading needles with greater independence Tying knots with greater independence Sewing cross stitch and appliqué Understanding the need to count the thread on a piece of evenweave	Understanding that there are different types of fastenings and what they are Articulating the benefits and disadvantages of different fastening types	Learning to sew blanket stitch to join fabric Applying blanket stitch so the space between the stitches are even and regular Threading needles independently	Learning different decorative stitches Application and outcome of the individual technique Sewing accurately with even regularity of stitches

			Neatly pinning and cutting fabric using a template	fabric in each direction to create uniform size and appearance Understanding that fabrics can be layered for affect			
Technical Knowlegd e – Electrical Systems	NA			Understanding what static electricity is and how it moves objects through attraction or repulsion Generating static electricity independently Using static electricity to make objects move in a desired way	Learning how electrical items work Identifying electrical products Learning what electrical conductors and insulators are Understanding that a battery contains stored electricity and can be used to power products Identifying the features of a torch Understanding how a torch works Articulating the positives and negatives about different torches	Learning the key components used to create a functioning circuit Learning that copper is a conductor and can be used as part of a circuit Understanding that breaks in a circuit will stop it from working Explaining how a series circuit will work in my card Identifying the negative and positive leg of an LED	Learning that batteries contain acid, which can be dangerous if they leak Identifying and naming the circuit components in a steady hand game

						• Drawing a series circuit diagram and symbols	
Technical Knowledge – food and nutrition	Experience of common fruit and vegetables, undertaking sensory activities i.e. appearance taste and smell. Experience of cutting soft fruit and vegetables using appropriate utensils. Practise stirring, mixing, pouring, blending Discuss how to make an activity safe and hygienic	describe textures wash hands & clean surfaces think of interesting ways to decorate food say where some foods come from, (i.e. plant or animal) describe differences between some food groups (i.e. sweet, vegetable etc.) discuss how fruit and vegetables are healthy cut, peel and	explain hygiene and keep a hygienic kitchen describe properties of ingredients and importance of varied diet say where food comes from (animal, underground etc.) describe how food is farmed, home-grown, caught draw eat well plate; explain there are groups of food describe “five a day” cut, peel and grate with increasing confidence	carefully select ingredients use equipment safely make product look attractive think about how to grow plants to use in cooking begin to understand food comes from UK and wider world describe how healthy diet= variety/balance of food/drinks explain how food and drink are needed for active/healthy bodies.	explain how to be safe/hygienic think about presenting product in interesting/ attractive ways understand ingredients can be fresh, pre-cooked or processed begin to understand about food being grown, reared or caught in the UK or wider world describe eat well plate and how a healthy diet=variety / balance of food and drinks explain importance of food and drink for active, healthy bodies prepare and cook some dishes safely and hygienically use some of the following techniques: peeling,	explain how to be safe / hygienic and follow own guidelines present product well - interesting, attractive, fit for purpose begin to understand seasonality of foods understand food can be grown, reared or caught in the UK and the wider world describe how recipes can be adapted to change appearance, taste, texture, aroma explain how there are different substances in food / drink needed for health	understand a recipe can be adapted by adding / substituting ingredients explain seasonality of foods learn about food processing methods name some types of food that are grown, reared or caught in the UK or wider world adapt recipes to change appearance, taste, texture or aroma. describe some of the different substances in food and drink, and how they can affect health

		grate safely, with support		prepare and cook some dishes safely and hygienically grow in confidence using some of the following techniques: peeling, chopping, slicing, grating, mixing, spreading, kneading and baking	chopping, slicing, grating, mixing, spreading, kneading and baking	prepare and cook some savoury dishes safely and hygienically including, where appropriate, use of heat source use range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.	prepare and cook a variety of savoury dishes safely and hygienically including, where appropriate, the use of heat source. use a range of techniques confidently such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.