Ackworth Howard C of E School

Educating for 'life in all its fullness.'

Design and Technology Curriculum Essential Knowledge

Intent

At Ackworth Howard J&I School, we believe that design and technology (DT) should develop: the mind (creativity, imagination, resourcefulness, innovation and enterprise); body (consideration of others, risk taking); and spirit (understanding of the impact on the wider world and the contribution to culture, wealth and well-being of the nation) of each child.

Mind

DT at our school is an inspiring, rigorous and practical subject that encourages children to learn to think and intervene creatively to solve problems, both as individuals and as members of a team. We encourage children to use their creativity and imagination, to design and make products that solve real and relevant problems within a variety of contexts. We also aim to make links to designs and designers throughout history, providing opportunities for children to critically reflect upon and evaluate their designs. Wherever possible, we link work to other disciplines such as mathematics, science, engineering, computing and art. This gives the learning purpose and relevance to the children.

Body

Children learn to take risks in a safe environment, becoming resourceful, innovative, enterprising and capable citizens considering their own and others' needs, wants and values. The unique talents of every child are embraced.

Spirit

Through the evaluation of past and present deign and technology, children develop a critical understanding of its impact on daily life and the wider world and the impact it has on the contribution to the creativity, culture, wealth and well-being of the nation.

Essentials for DT…

- All children have an opportunity to think creatively about how to solve design problems.
- All children have the opportunity to acquire a broad range of subject knowledge and draw on other disciplines.
- All children can evaluate and test their own and the work of others critically and make suggestions for improvements.
- All children know how to use equipment in a safe way and manage risk.
- All children have been taught the relevant technological skills to build their design.
- All children have an appreciation of innovative technological design that they have seen or experienced in their everyday lives.
- All children have an understanding and apply the principles of nutrition and learn how to cook.

Early Years DT

Area of Learning	Ackworth Howard's Knowledge Essentials	Activities
Physical Development Early years outcomes are prerequisite skills for DT within the national curriculum. The table outlines the most relevant early years outcomes from 30-50 months to ELG, brought together from different areas of the Early Years Foundation Stage, to match the programme of study for DT.	**<u>30-50 Months</u>** **Moving and Handling** • To use one-handed tools and equipment, e.g. makes snips in paper with child scissors. **Health and Self-Care** • To understand that equipment and tools have to be used safely. **<u>40-60 Months</u>** **Moving and Handling** • To use simple tools to effect changes to materials. • To handle tools, objects, construction and malleable materials safely and with increasing control. **Health and Self-Care** • To show understanding of the need for safety when tackling new challenges and consider and manage some risks. • To show understanding of how to transport and store equipment safely. • To practise some appropriate safety measures without direct supervision. **<u>Early Learning Goal</u>** • To handle equipment and tools effectively, including pencils for writing.	Construction area – duplo, wooden blocks, non-fiction texts Workshop – felt tips, scissors, crayons, chalks, glue, tape, stapler, hole-punch, pipe cleaners, fabric, lollipop sticks, tissue paper, cardboard, sugar paper. Kitchen Area - toaster, plates, knives, spoons, dishes, washing up bowl and sponges etc. A range of recipes linked to topics such as making pumpkin soup – Harvest (through continuous provision) A range of structures such as making houses for the Three Little Pigs (through continuous provision) Making objects from stories such as brushes for Farmer Duck (cont. provision)
Understanding the World Early years outcomes are prerequisite skills for DT within the national curriculum. The table outlines the most relevant early years outcomes from 30-50 months to ELG, brought together from different areas of the Early Years Foundation Stage, to match the programme of study for DT.	**<u>30-50 Months</u>** **Technology** • To show an interest in technological toys with knobs or pulleys, or real objects. • To show skill in making toys work by pressing parts or lifting flaps to achieve effects, such as sound, movements or new images.	

Early Years DT

Area of Learning	Ackworth Howard's Knowledge Essentials	Activities
Expressive Arts and Design Early years outcomes are prerequisite skills for DT within the national curriculum. The table outlines the most relevant early years outcomes from 30-50 months to ELG, brought together from different areas of the Early Years Foundation Stage, to match the programme of study for DT.	**30-50 Months** **Exploring and Using Media and Materials** • To enjoy joining in with dancing and ring games. • To begin to move rhythmically. • To imitate movement in response to music. • To tap out simple repeated rhythms **Being Imaginative** • To develop preferences for forms of expression. • To use movement to express feelings. • To create movement in response to music. • To capture experiences and responses with a range of media, such as music, dance and paint and other materials or words. **40-60 Months** **Exploring and Using Media and Materials** • To explore what happens when they mix colours. • To experiment to create different textures. • To understand that different media can be combined to create new effects. • To manipulate materials to achieve a planned effect. • To construct with a purpose in mind, using a variety of resources. • To use simple tools and techniques competently and appropriately. • To select appropriate resources and adapt work where necessary. • To select tools and techniques needed to shape, assemble and join materials they are using. **Being Imaginative** • To create simple representations of events, people and objects. • To choose particular colours to use for a purpose.	Construction area – duplo, wooden blocks, non-fiction texts Workshop – felt tips, scissors, crayons, chalks, glue, tape, stapler, hole-punch, pipe cleaners, fabric, lollipop sticks, tissue paper, cardboard, sugar paper. Kitchen Area - toaster, plates, knives, spoons, dishes, washing up bowl and sponges etc. A range of recipes linked to topics such as making pumpkin soup – Harvest (through continuous provision) A range of structures such as making houses for the Three Little Pigs (through continuous provision) Making objects from stories such as brushes for Farmer Duck (cont. provision)

Early Years DT

Area of Learning	Ackworth Howard's Knowledge Essentials	Activities
Expressive Arts and Design Early years outcomes are prerequisite skills for DT within the national curriculum. The table outlines the most relevant early years outcomes from 30-50 months to ELG, brought together from different areas of the Early Years Foundation Stage, to match the programme of study for DT.	**Early Learning Goal** **Exploring and Using Media and Materials** • To safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. **Being Imaginative** • To use what they have learnt about media and materials in original ways, thinking about uses and purposes. They represent their own ideas, thoughts and feelings through design and technology, art, music, dance, role play and stories.	See previous slides.

Early Years DT Vocabulary

Essential Vocabulary			
Build Cut Stick Construct Assemble Tools Equipment	Safety Control Join Snip Shapes Materials Cook	Mix Stir Blend Grate Movement Pour Stir	Measure Texture Assemble Plan Design Colour Evaluate

Intended Learning Outcomes

- Use and explore a variety of resources, techniques and equipment in 2D and 3D, making choices and decisions along the way.
- Explore colour, texture, shape and patterns.
- Develop hand-eye coordination and fine motor skills.
- Develop mathematical language e.g. position, size, shape, comparisons.
- Manipulate a range of equipment and tools.
- Develop their own ideas over a period of time.
- Use resources purposefully, expressing real life experiences.
- Talk through their ideas.

Key Vocabulary and Questions

- Names of materials & equipment e.g. boxes, glue, scissors etc.
- Imaginative/descriptive language – when children are talking about creative work e.g. pattern, mark, dab, shade, colour, stick, cut, press etc.
- 2D and 3D shape names e.g. square, circle, rectangle, cube, cuboid, cylinder.
- Other shape/size language e.g. curved, round, big, small. What are you going to make? What colours can you use? / What textures can you feel? What did you use to make your model? How did you …? What do you think about your …?

Year 1

National Curriculum	Ackworth Howard's Knowledge Essentials	Activities
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.	• Design for others • Design mechanisms	**Activities are suggestions – link to themes** **Cooking and Nutrition –** Design a fruit/vegetable Smoothie **Mechanisms –** Design a moving story book with levers and sliders / Design a moving vehicle **Structures –** Design a structure (windmill) **Textiles –** Design a puppet
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 • use the basic principles of a healthy and varied diet to prepare dishes • understand where food comes from.	• Chop ingredients including fruit and vegetables • Prepare and make a food product • Assemble accurately, cutting neatly • Create different movements (up, down, along and around) • Assemble different components to work together to create motion • Select suitable equipment • Sequence steps for construction • Adapt mechanisms • Measure and cut accurately • Follow a design brief • Work to scale • Identify commonly used materials	**Cooking and Nutrition –** Make a fruit/vegetable Smoothie **Mechanisms –** Make a moving story book with levers and sliders / Make a moving vehicle **Structures –** Make a structure (windmill) **Textiles –** Make a puppet
Evaluate • Explore and evaluate a range of existing products • Evaluate their ideas and products against design criteria	• Evaluate and adapt designs • Test a finished product • Reflect on a finished product • Research and test mechanisms	**Cooking and Nutrition -** Fruit and Vegetable Smoothie (Evaluate and adapt designs) **Mechanisms -** Moving Storybook: Sliders (Test finished product) **Structures –** Windmills (Test finished product) **Textiles –** Puppets (Reflect on finished product) **Mechanisms -** Wheels and Axles (Research and test mechanisms)

Year 1

National Curriculum	Ackworth Howard's Knowledge Essentials	Activities
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. • Cooking and Nutrition: Use the basic principles of a healthy and varied diet to prepare dishes • Cooking and Nutrition: Understand where food comes from	• Describe and group fruits by texture and taste • Understand the difference between fruit and vegetables • Understand what a mechanism is • Understand how to create different movement • Develop an awareness of different structures for different purposes • Understand how to turn 2D nets into 3D structures • Understand what mechanisms are • Know the different ways fabric can be joined • Understand how to prepare fabric for joining • Understand how an axel works	**Cooking and Nutrition -** Fruit and Vegetable Smoothie (Describe and group varieties) **Mechanisms -** Moving Storybook: Sliders (Explore creating different movements) **Structures –** Windmills (Explore 2-D/3-D structures and mechanisms) **Textiles –** Puppets (Explore the joining of fabrics) **Mechanisms -** Wheels and Axles (Explore how an axel works)

Year 1 DT Vocabulary

Essential Vocabulary			
Cooking and Nutrition	**Mechanisms**	**Structures**	**Textiles**
Fruit	Wheel	Cut	Pattern
Vegetables	Axel	Fold	Mark Out
Soft	Fixed	Join	Join
Juicy	Free	Fix	Decorate
Crunchy	Design	Weak	Running Stitch
Sticky	Make	Strong	Needle
Smooth/ie	Cutting		Fabric
Sharp	Joining		Design
Crisp	Hacksaw		Glue
Sour	Vice		Model
Hard	Dowel		Stencil
Flesh	Body		Template
Skin	Cab		
Seed	Shaping		
Pip			
Core			
Slice			
Cutting			
Squeezing			
Healthy Diet			
Choosing			
Ingredients			
Planning			
Tasting			
Blender			
Carton			
Peel/er			
Recipe			

Year 2

National Curriculum	Ackworth Howard's Knowledge Essentials	Activities
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.	• Design packaging for a product • Create and use design criteria, generating ideas and planning for design and manufacture • Design for others, using criteria and applying knowledge of structures • Consider purpose in the design process • Design mechanisms	**Activities are suggestions – link to themes** **Cooking and Nutrition –** Design a wrap **Mechanisms –** Design a moving monster / Design a Ferris Wheel **Structures –** Design a chair for a character (link to the reading spine). **Textiles –** Design a pouch for Samuel Pepys.
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 • use the basic principles of a healthy and varied diet to prepare dishes • understand where food comes from.	• Prepare food safely and hygienically • Chop safely using the bridge grip • Cut and assemble accurately • Select appropriate equipment and materials • Thread a needle • Sew a running stitch • Prepare fabrics for sewing • Work to scale and follow a design brief	**Cooking and Nutrition –** Make a wrap **Mechanisms –** Make a moving monster / Make a Ferris Wheel **Structures –** Make a chair for a character (link to the reading spine). **Textiles –** Make a wallet or purse
Evaluate • Explore and evaluate a range of existing products • Evaluate their ideas and products against design criteria	• Conduct product research • Research mechanisms • Apply research to a design • Test designs • Evaluate a design • Recognise examples of natural and manmade structures • Discuss the making process and the finished product • Test and adapt mechanisms	**Cooking and Nutrition –** A Balanced Diet (Evaluate a design after incorporating product research) **Mechanisms –** Moving Monsters / Ferris Wheel (Evaluate – reflect on research, testing and adaptations) **Structures –** Chair (Test and evaluate including the use of materials) **Textiles –** Pouches (Discuss the making process and the finished product)

Year 2

National Curriculum	Ackworth Howard's Knowledge Essentials	Activities
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. • Cooking and Nutrition: Use the basic principles of a healthy and varied diet to prepare dishes • Cooking and Nutrition: Understand where food comes from	• Understand how fruit and vegetables grow • Know the food groups • Understand what makes a balanced diet • Learn mechanical components • Identify input and output • Understand the definition and importance of strength, stability and stiffness • Know that different shapes can strengthen or weaken structures and that materials can be manipulated to improve strength and stiffness • Identify parts of a needle (point and eye) • Understand the alternative ways of joining fabrics and embellishments • Understand how an axle works • Know materials commonly used for wheels	**Cooking and Nutrition –** A Balanced Diet (Understand what makes a balanced diet and associated food groups) **Mechanisms –** Moving Monsters / Ferris Wheel (Explore how components work) **Structures –** Chair (Explore strength, stability and stiffness) **Textiles –** Pouches (Explore alternative ways of joining fabrics and embellishments)

Year 2 DT Vocabulary

Essential Vocabulary			
Cooking and Nutrition	**Mechanisms**	**Structures**	**Textiles**
Fruit	Mechanism	Structure	Template
Vegetables	Lever	Base	Quality
Soft	Slider	Underneath	Suitable
Juicy	Slot	Thicker	Features
Crunchy	Pivot	Thinner	Dye
Sticky	Guide/Bridge	Corner	Overstitch
Smooth	Masking Tape	Point	Design
Sharp	Fastener	Straight	Fray
Crisp	Pull	Curved	Mock-Up
Sour Hard	Push	Rectangle	Seam
Flesh	Down	Cube	Fabric
Skin	Straight	Cuboid	Knot
Seed	Work	Cylinder	Pouch
Pip	Design	Function	Running-Stitch
Core	Evaluate	Man-made	Sew
Slicing	Purpose	Mould	Stencil
Peeling		Natural	
Cutting		Stable	
Squeezing		Stiff	
Healthy Diet		Strong	
Choosing		Weak	
Ingredients			
Planning			
Tasting			
Arranging			

Year 3

National Curriculum	Ackworth Howard's Knowledge Essentials	Activities
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	• Design to a criteria • Use design criteria to develop ideas • Establish and use design criteria to help focus and evaluate work • Generate and communicate ideas using sketching and modelling, using the views of others to improve their designs • Plan for manufacture • Design for a purpose	**Activities are suggestions – link to themes** **Cooking and Nutrition –** Eating Seasonally (Design a crumble/tart using seasonal ingredients) **Mechanisms –** Pneumatic Systems (Design a pneumatic toy) **Structures –** Design a Stone Age timber frame house. **Textiles –** Cushions (Design a cushion) **Electrical Systems –** Static Electricity (Design a simple game which uses static electricity)
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 wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities • Cooking and Nutrition: Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques	• Safely prepare fruit and vegetables • Follow a recipe • Select appropriate materials and equipment for functional and aesthetic purposes • Use more demanding practical skills (paper engineering/paper folding techniques) • Sew cross stitch and use applique • Use electrostatic energy to move objects in isolation as well as part of a system	**Cooking and Nutrition –** Eating Seasonally (Make a crumble/tart using seasonal ingredients) **Mechanisms –** Pneumatic Systems (Make a pneumatic toy) **Structures –** Make a Stone Age house. **Textiles –** Cushions (Make a cushion) **Electrical Systems –** Static Electricity (Make a simple game which uses static electricity)
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	• Taste and evaluate own creations • Assess how well a created product works • Compare to designs • Evaluate during the making process • Evaluate own and others final product • Evaluate and adapt designs	**Cooking and Nutrition –** Eating Seasonally (Taste and evaluate) **Mechanisms –** Pneumatic Systems (Assess how well the product works and if it matches the design) **Structures –** Evaluate own and other's work during and at the end of the making process. **Textiles –** Cushions (Compare to design) **Electrical Systems –** Static Electricity (Evaluate and adapt design)

Year 3

National Curriculum	Ackworth Howard's Knowledge Essentials	Activities
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 • Cooking and Nutrition: Understand and apply the principles of a healthy and varied diet • Cooking and Nutrition: Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed	• Know what foods are in season and when • Understand the benefits of foods by their colour • Know how climate alters the sweetness of food • Understand how pneumatic systems work • Apply prior knowledge and increasing knowledge of nets • Understand that fabrics can be layered for effect • Know different stitch types • Understand what static electricity means and how to generate it • Know what a 'target audience' is	**Cooking and Nutrition –** Eating Seasonally (Explore seasonal food and how climate affects it) **Mechanisms –** Pneumatic Systems (Explore how pneumatic systems work) **Structures –** Stone Age house (Apply prior knowledge of nets) **Textiles –** Cushions (Explore layering and apply different stitches) **Electrical Systems –** Static Electricity (Explore what static electricity is and what is meant by a target audience)

Year 3 DT Vocabulary

Essential Vocabulary				
Cooking and Nutrition	**Mechanisms**	**Structures**	**Textiles**	**Electrical Systems**
Texture	Loose Pivot	Shell	Fastening	User
Taste	Fixed Pivot	Structure	Compartment	Fault
Appearance	System	Net	Zip	Toggle Switch
Preference	Input	Marking Out	Finishing Technique	Insulator
Greasy	Process	Material	Function	Conductor
Moist	Pneumatic	Joining	Prototype	Battery Holder
Fresh		Three Dimensional	Back Stitch	Crocodile Clip
Savoury		Stiff	Cross Stitch	Static
Hygienic		Timber	Felted	
Edible		Frame	Woven	
Grown		3D Shapes	Knitted	
Reared		Façade	Bonded	
Caught		Stable		
Frozen		Strong		
Tinned				
Processed				
Seasonal				
Harvested				
Climate				
Imported				
Exported				

Year 4

National Curriculum	Ackworth Howard's Knowledge Essentials	Activities
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	• Work within a design brief • Explore and design within a given context/theme • Design for others and plan production • Develop designs using the views of others to improve them • Use nets and tabs to design and make the car body	**Activities are suggestions – link to themes** **Cooking and Nutrition –** Adapting a Recipe (Design a product that falls within a set budget and design brief) **Mechanisms –** Slingshot Cars (Design a car) **Structures –** Pavilion (Design a landscape and pavilion) **Textiles –** Fastenings (Design a book sleeve) **Electrical Systems –** Torches (Design a functioning torch)
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 wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities • Cooking and Nutrition: Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques	• Follow but adapt a recipe • Prepare food hygienically • Use a range of equipment to create frame structures • Select suitable tools • Create neatly presented work • Make an electrical circuit • Measure, mark, cut and assemble accurately	**Cooking and Nutrition –** Adapting a Recipe (Make a product that falls within a set budget and design brief) **Mechanisms –** Slingshot Cars (Make a car) **Structures –** Pavilion (Make a landscape and pavilion) **Textiles –** Fastenings (Make a book sleeve) **Electrical Systems –** Torches (Make a functioning torch)
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	• Discuss flavours identified • Discuss existing pavilions • Research existing products • Evaluate to improve work • Test final products • Test products in time trails	**Cooking and Nutrition –** Adapting a Recipe (Discuss flavours identified) **Mechanisms –** Slingshot Cars (Test product in time trials) **Structures –** Pavilion (Discuss existing pavilions) **Textiles –** Fastenings (Research existing products) **Electrical Systems –** Torches (Test final products)

Year 4

National Curriculum	Ackworth Howard's Knowledge Essentials	Activities
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 • Cooking and Nutrition: Understand and apply the principles of a healthy and varied diet • Cooking and Nutrition: Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed	• Understand the costs behind professional food preparation • Understand the factors that contribute to product design • Know what a pavilion is • Build on prior knowledge of net structures and broadening knowledge of frame structures • Know that architects consider light, shadow and patterns when designing • Understand stitches and their benefits • Know how to use templates • Know that electricity is energy • Know that batteries are used to store electricity • Know terminology such as: insulator, conductor, LED, battery, coin, cell batteries • Know component names such as: chassis, axle etc • Understand that car body shapes can impact on speed (air resistance)	**Cooking and Nutrition –** Adapting a Recipe (Explore the costs behind food preparation) **Mechanisms –** Slingshot Cars (Explore car body shapes and how this impacts on speed) **Structures –** Pavilion (Build on prior knowledge of nets and structures) **Textiles –** Fastenings (Use templates and apply a range of stitching techniques) **Electrical Systems –** Torches (Understand terminology in relation to electricity)

Year 4 DT Vocabulary

Essential Vocabulary				
Cooking and Nutrition	**Mechanisms**	**Structures**	**Textiles**	**Electrical Systems**
Texture	Loose Pivot	Assemble	Aesthetics	Series Circuit
Taste	Fixed Pivot	Prism	Seam Allowance	Connection
Appearance	System	Vertex	Pinning	Push-Tomake Switch
Preference	Input	Breadth	Embroidery	Push-to-Break Switch
Greasy	Process	Capacity	Back Stitch	Innovative
Moist	Output	Scoring	Blanket Stitch	Appealing
Fresh	Linear	Adhesives	Cross Stitch	Control Box
Savoury	Rotary	Reduce	Fastening	Input Device
Hygienic	Reciprocating	Reuse		Output Device
Edible	Innovative	Recycle		System
Grown	Appealing	Corrugating		
Reared	Linkage	Ribbing		
Caught	Oscillating	Laminating		
Frozen	Chassis			
Tinned	Axle			
Processed	Air Resistance			
Seasonal	Kinetic Energy			
Harvested				
Prototype				
Budget				

Year 5

National Curriculum	Ackworth Howard's Knowledge Essentials	Activities
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	• Adapt a recipe • Plan using storyboards and designs, communicating through words and illustrations • Design for a purpose • Apply knowledge to generate design ideas • Identify target audiences • Design arch and truss bridges	**Activities are suggestions – link to themes** **Cooking and Nutrition –** What Could Be Healthier? (Design a recipe) **Mechanisms –** Pop Up Books (Design a pop up book) **Structures –** Bridges (Design a bridge for Charles Waterton's first nature reserve in the world – Walton Hall) **Textiles –** Stuffed Toys (Design a stuffed toy) **Electrical Systems –** Electric Greeting Card (Design a greeting card)
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 wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities • Cooking and Nutrition: Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques	• Cut and prepare vegetables hygienically • Cook meat safely • Make functional components • Use layers and spacers to construct pages • Cut, join and assemble with accuracy • Make circuits • Select materials and equipment according to functional properties • Work with increasing accuracy in practical tasks • Use triangulation for bracing	**Cooking and Nutrition –** What Could Be Healthier? (Make an adapted recipe) **Mechanisms –** Pop Up Books (Create a pop up book) **Structures –** Bridges (Build a bridge) **Textiles –** Stuffed Toys (Make a 3D stuffed toy) **Electrical Systems –** Electric Greeting Card (Make a greeting card)
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	• Taste and adapt a dish during the cooking process • Constantly evaluate progress against a design • Compare 3D objects to a 2D design • Experiment with circuits to consolidate knowledge of function • Test the function of a product • Test to destruction to evaluate the successful properties of a design and its materials	**Cooking and Nutrition –** Make an adapted recipe reflecting upon ethical decisions. **Mechanisms –** Pop Up Books (Constantly evaluate against design) **Structures –** Bridges (Test to destruction) **Textiles –** Stuffed Toys (Compare 3D outcome to 2D design) **Electrical Systems –** Electric Greeting Card (Experiment with circuits and test the product)

Year 5

National Curriculum	Ackworth Howard's Knowledge Essentials	Activities
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 • Cooking and Nutrition: Understand and apply the principles of a healthy and varied diet • Cooking and Nutrition: Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed	• Know where meat comes from • Understand ethical issues around beef • Know nutritional values of packaged food • Understand sliders, levers and linkages • Understand structures and mechanisms • Understand construction methods for 3D shapes • Know how to create a hidden seam • Draw circuit diagrams • Know the function of different components • Understand the terminology: insulator, conductor, LED, battery • Understand the importance of compression and tension in bridge structures	**Cooking and Nutrition –** Learn where meat comes from and understand ethical issues around beef. Explore nutritional values of packaged food **Mechanisms –** Pop Up Books (Investigate sliders, levers and linkages) **Structures –** Bridges (Investigate the importance of compression and tension in structures) **Textiles –** Stuffed Toys (Learn how to create a hidden seam) **Electrical Systems –** Electric Greeting Card (Investigate the function of different components)

Year 5 DT Vocabulary

Essential Vocabulary

Cooking and Nutrition	Mechanisms	Structures	Textiles	Electrical Systems
Ingredients	Pulley	Reinforce	Specification	Parallel Circuit
Cross-contamination	Gear	Triangulation	Tacking	Series Circuit
Welfare	Driver	Stability	Working	Light Emitting Diode
Yeast	Follower	Temporary	Drawing	Monitor
Dough	Rotation	Permanent	Clasp	Flowchart
Wholemeal	Motor	Prototype	Pinking Shears	Design Specification
Unleavened	Belt	Innovation	Design Criteria	Reed Switch
Baking Soda	Spindle	Functional	Hem	Tilt Switch
Spice	Motor	Design Brief	Hidden Seam	Insulator
Herbs	Circuit		Reinforce	Conductor
Carbohydrate	Sliders		Stem Stitch	LED
Sugar	Levers		Satin Stitch	Battery
Fat	Linkages		Tie Dye	Buzzer
Protein	Switch			Component
Vitamins	Ratio			Copper
Nutrients	Transmit			Function
Gluten	Annotated Drawings			Graphite
Allergy	Exploded Diagrams			
Intolerance	Functionality			
Savoury				
Seasonality				
Pour				
Mix				
Kneed				
Whisk				
Beat				
Combine				
Fold				
Rubbing In				
Nutritional				

Year 6

National Curriculum	Ackworth Howard's Knowledge Essentials	Activities
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	• Use recipe books/websites • Experiment with cams to make suitable design decisions • Design for a process • Generate ideas through sketching and discussion • Model ideas through prototypes • Establish and use a design criteria to help focus and evaluate work	**Activities are suggestions – link to themes** **Cooking and Nutrition –** Come Dine With Me (Design a three course meal) **Mechanisms –** Automata Toys (Design a mechanical window display) **Structures –** Anderson Shelter (Design a shelter) **Textiles –** Design an African Textile Tapestry to hang in the hall. **Electrical Systems –** Steady Hand Games (Design a steady hand game)
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 wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities • Cooking and Nutrition: Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques	• Work with food hygienically and safely working to a timescale • Measure, mark and cut woodwork accurately • Select appropriate equipment • Assemble components accurately • Cut and assemble accurately • Accurately cut and join, using a running stitch. • Create something in a given style • Adapt to increasingly more demanding practical skills • Select materials for their aesthetic and functional properties • Make, strengthen and stiffen a range of structures	**Cooking and Nutrition –** Come Dine With Me (Make a three course meal) **Mechanisms –** Automata Toys (Make a mechanical window display) **Structures –** Shelters (Make an Anderson Shelter) **Textiles –** Make an African Textile Tapestry to hang in the hall. **Electrical Systems –** Steady Hand Games (Make a steady hand game)
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	• Taste and evaluate own food creations • Check the accuracy of work • Evaluate work continually • Adapt products to improve functionality • Test finished products • Explore existing structures	**Cooking and Nutrition –** Taste and evaluate a prepared three course meal **Mechanisms –** Automata Toys (Check accuracy of work) **Structures –** Shelters (Explore existing structures) **Textiles –** African Tapestry (Evaluate work continually) **Electrical Systems –** Steady Hand Games (Adapt product functionality after testing)

Year 6

National Curriculum	Ackworth Howard's Knowledge Essentials	Activities
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 • Cooking and Nutrition: Understand and apply the principles of a healthy and varied diet • Cooking and Nutrition: Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed	• Understand the risks of meat or fish when not cooked or stored properly • Understand safe storage of meat/fish • Name types of cam • Know how cams impact follower movements • Know how to create hidden seams • Create and use electric circuits in designs • Know how to make electromagnetic motors • Apply knowledge of construction techniques to realise design ideas • Stabilise more complex structures using bracing	**Cooking and Nutrition –** Develop and understanding of food contamination risks when preparing a three course meal **Mechanisms –** Automata Toys (Explore cams) **Structures –** Shelters (Investigate ideas to stabilise more complex structures such as bracing) **Textiles –** Tapestry (Know how to create hidden seams) **Electrical Systems –** Steady Hand Games (explore the use of electro magnetic motors)

Year 6 DT Vocabulary

Essential Vocabulary

Cooking and Nutrition	Mechanisms	Structures	Textiles	Electrical Systems
Ingredients	Transmit	Reinforce	Applique	Light Dependent Resistor
Yeast	Annotated Drawings	Triangulation	Annotate	Interface Control
Dough	Exploded Diagrams	Stability	Evaluate	Micro Switch
Wholemeal	Functionality	Temporary	Innovation	Latching Switch
Unleavened	Cam	Permanent	Functionality	Electromagnetic
Baking Soda	Follower Movement	Prototype	Renewable	Circuit
Spice		Innovation	Authentic	Conductor
Herbs		Functional	Chain Stitch	Function
Carbohydrate		Design Brief	Hidden Seam	Insulator
Sugar		Bracing	Tapestry	LED
Fat				Magnetic Field
Protein				Prototype
Vitamins				Series Circuit
Nutrients				
Gluten				
Allergy				
Intolerance				
Savoury				
Seasonality				
Pour				
Mix				
Kneed				
Whisk				
Beat				
Combine				
Fold				
Rubbing In				