Higher Walton CE Primary School – DT Curriculum Progression

	RECEPTION	
Early Years	**AUTUMN**	
	Development Matters Statements	**Progression of knowledge and skills**
	Expressive Arts & Design (Creating with materials) Children safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	• Making verbal plans and material choices. • Developing a junk model. • Improving fine motor/scissor skills with a variety of materials. • Joining materials in a variety of ways (temporary and permanent). • Joining different materials together. • Describing their junk model, and how they intend to put it together. • Giving a verbal evaluation of their own and others' junk models with adult support. • Checking to see if their model matches their plan. • Considering what they would do differently if they were to do it again. • Describing their favourite and least favourite part of their model. • To know there are a range to different materials that can be used to make a model and that they are all slightly different. • Making simple suggestions to fix their junk model.
	Expressive Arts & Design (Being imaginative and expressive) Children used what they have learnt about media and materials in original ways, thinking about uses and purposes. They present their own ideas, thoughts and feelings through design and technology, art, music, dance, role-play and stories.	
	Physical Development (Fine motor skills) Use a range of small tools, including scissors, paintbrushes and cutlery. Begin to show accuracy and care when drawing.	

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	Expectation by the end of:	
	Reception (Early Learning Goals):	
	SPRING	
	Development Matters Statements	**Progression of knowledge and skills**
	Expressive Arts & Design (Creating with materials) Children safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	• Discussing what a good design needs. • Designing a simple pattern with paper. • Designing a bookmark. • Choosing from available materials. • Developing fine motor/cutting skills with scissors. • Exploring fine motor/threading and weaving (under, over technique) with a variety of materials. • Using a prepared needle and wool to practise threading. • Reflecting on a finished product and comparing to their design. • To know that a design is a way of planning our idea before we start. • To know that threading is putting one material through an object.
	Expressive Arts & Design (Being imaginative and expressive) Children used what they have learnt about media and materials in original ways, thinking about uses and purposes. They present their own ideas, thoughts and feelings through design and technology, art, music, dance, roleplay and stories.	
	Physical Development (Fine motor skills) Use a range of small tools, including scissors, paintbrushes and cutlery. Begin to show accuracy and care when drawing.	

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Expectation by the end of:	
Reception (Early Learning Goals):	
SUMMER	
Development Matters Statements	**Progression of knowledge and skills**
Expressive Arts & Design (Creating with materials) Children safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	• Designing a junk model boat. • Using knowledge from exploration to inform design. • Making a boat that floats and is waterproof, considering material choices. • Making predictions about, and evaluating different materials to see if they are waterproof. • Making predictions about, and evaluating existing boats to see which floats best. • Testing their design and reflecting on what could have been done differently. • Investigating the how the shapes and structure of a boat affect the way it moves. • To know that 'waterproof' materials are those which do not absorb water
Expressive Arts & Design (Being imaginative and expressive) Children used what they have learnt about media and materials in original ways, thinking about uses and purposes. They present their own ideas, thoughts and feelings through design and technology, art, music, dance, roleplay and stories.	
Physical Development (Fine motor skills) Use a range of small tools, including scissors, paintbrushes and cutlery. Begin to show accuracy and care when drawing.	
Expectation by the end of:	
Reception (Early Learning Goals):	

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<table>
<tr><th colspan="3">KEY STAGE ONE</th></tr>
<tr><td rowspan="3">Structures</td><td colspan="2">Pupils should be taught to:
Design: Pupils should be taught to: 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
Pupils should be taught to: 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: Pupils should be taught to: explore and evaluate a range of existing products evaluate their ideas and products against design criteria
Technical Knowledge: Pupils should be taught to: 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.</td></tr>
<tr><td colspan="2">Expectation by the end of:</td></tr>
<tr><td><u>Year 1: Windmill</u>
Learning the importance of a clear design criteria.
Including individual preferences and requirements in a design.
Making stable structures from card, tape and glue.
Learning how to turn 2D nets into 3D structures.
Following instructions to cut and assemble the supporting structure of a windmill.
Making functioning turbines and axles which are assembled into a main supporting structure
Evaluating a windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn’t.
Suggest points for improvements.
Understand that the shape of materials can be changed to improve the strength and stiffness of structures.
Understand that cylinders are a strong type of structure (e.g. the main shape used for windmills and lighthouses).
Understand that axles are used in structures and mechanisms to make parts turn in a circle.
Begin to understand that different structures are used for different purposes.
Know that a structure is something that has been made and put together.</td><td><u>Year 2: Baby bear’s chair</u>
Generating and communicating ideas using sketching and modelling.
Learning about different types of structures, found in the natural world and in everyday objects.
Making a structure according to design criteria.
Creating joints and structures from paper/card and tape.
Building a strong and stiff structure by folding paper.
Exploring the features of structures.
Comparing the stability of different shapes.
Testing the strength of own structures.
Identifying the weakest part of a structure.
Evaluating the strength, stiffness and stability of own structure.
Know that shapes and structures with wide, flat bases or legs are the most stable.
Understand that the shape of a structure affects its strength.
Know that materials can be manipulated to improve strength and stiffness.
Know that a structure is something which has been formed or made from parts.
Know that a ‘stable’ structure is one which is firmly fixed and unlikely to change or move.
Know that a ‘strong’ structure is one which does not break easily.
Know that a ‘stiff’ structure or material is one which does not bend easily.</td></tr>
</table>

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Mechanisms/mechanical systems	**Pupils should be taught to:** Design: Pupils should be taught to: 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 Pupils should be taught to: 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: Pupils should be taught to: explore and evaluate a range of existing products evaluate their ideas and products against design criteria Technical Knowledge: Pupils should be taught to: 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.	
	Expectation by the end of:	
	<u>Year 1: Moving story book</u> • Follow a design to create moving models that use levers and sliders • Review the success of a product by testing it with its intended audience • *Know that a mechanism is the part of an object that move together* • *Know that a slider mechanism moves object from side to side* • *Know that a slider mechanisms has a slider, slot, guide and an object*	**<u>Year 2 Ferris wheel and moving moster</u>** • Selecting a suitable linkage system to produce the desired motion. • Designing a wheel. • Selecting materials according to their characteristics. • Following a design brief. • Evaluating different designs. • Testing and adapting a design. • *Know that different materials have different properties and are therefore suitable for different uses.* • *Know the features of a Ferris wheel include the wheel frame, pods, a base, an axle and an axle holder* • Creating a class design criteria for a moving monster. • Designing a moving monster for a specific audience in accordance with a design criteria. • Making linkages using card for levers and split pins for pivots. • Evaluating own designs against design criteria. • Using peer feedback to modify a final design. • Experimenting with linkages adjusting the widths, lengths and thicknesses of card used. • Cutting and assembling components neatly. • *Know that mechanisms are a collection of moving parts that work together as a machine to produce movement.* • *Know that there is always an input and output in a mechanism.*

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		• *Know that an input is the energy that is used to start something working.* • *Know that an output is the movement that happens as a result of the input.* • *Know that a lever is something that turns on a pivot.* • *Know that a linkage mechanism is made up of a series of levers.*
Cooking and nutrition	**Pupils should be taught to:** Design: Pupils should be taught to: 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 Pupils should be taught to: 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: Pupils should be taught to: explore and evaluate a range of existing products evaluate their ideas and products against design criteria Cooking & Nutrition: Pupils should be taught to: use the basic principles of a healthy and varied diet to prepare dishes understand where food comes from.	
	Expectation by the end of:	
	Year 1: Smoothies • Designing smoothie carton packaging by-hand or on ICT software. • Chopping fruit and vegetables safely to make a smoothie. • Juicing fruit to make a smoothie • Identifying if a food is fruit • Learning where and how fruit and veg are grown • Tasting and evaluating different food combinations. • Describing appearance, smell and taste. • Suggesting information to be included on packaging. • *Understand that some foods typically known as vegetables are actually fruits (e.g. cucumber).* • *Know that a blender is a machine which mixes ingredients together into a smooth liquid.* • *Know that a fruit has seeds and a vegetable does not.* • *Know that fruits grow on trees or vines.* • *Know that vegetables can grow either above or below ground.*	**Year 2: Balanced diet** • Know that 'diet' means the food and drink that a person or animal usually eats. • Understand what makes a balanced diet. • Know where to find the nutritional information on packaging. • Know that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar. • *Understand that I should eat a range of different foods from each food group, and roughly how much of each food group.* • *Know that nutrients are substances in food that all living things need to make energy, grow and develop.* • *Know that 'ingredients' means the items in a mixture or recipe.*

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Textiles

Pupils should be taught to:

Design: Pupils should be taught to: 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

Pupils should be taught to: 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: Pupils should be taught to: explore and evaluate a range of existing products evaluate their ideas and products against design criteria

Expectation by the end of:

Year 1: Puppets

- Using a template to create a design for a puppet.
- Cutting fabric neatly with scissors.
- Using joining methods to decorate a puppet.
- Sequencing steps for construction.
- Reflecting on a finished product, explaining likes and dislikes.
- *To know that 'joining technique' means connecting two pieces of material together.*
- *Know that there are various temporary methods of joining fabric by using staples, glue or pins.*
- *Understand that different techniques for joining materials can be used for different purposes.*
- *Understand that a template (or fabric pattern) is used to cut out the same shape multiple times.*
- *Know that drawing a design idea is useful to see how an idea will look.*

Year 2: Puppets

- Threading a needle.
- Sewing running stitch, with evenly spaced, neat, even stitches to join fabric.
- Neatly pinning and cutting fabric using a template.
- Troubleshooting scenarios posed by teacher.
- Evaluating the quality of the stitching on others' work.
- Discussing as a class, the success of their stitching against the success criteria.
- *Know that sewing is a method of joining fabric.*
- *Know that different stitches can be used when sewing.*
- *Understand the importance of tying a knot after sewing the final stitch.*

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LOWER KEY STAGE TWO

Structures

Pupils should be taught to:

Design: Pupils should be taught to: 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-aid

Make: Pupils should be taught to: 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: Pupils should be taught to: 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: Pupils should be taught to: 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

Expectation by the end of:

Year 3: Castles

- Designing a castle with key features to appeal to a specific person/purpose.
- Drawing and labelling a castle design using 2D shapes, labelling: -the 3D shapes that will create the features - materials needed and colours.
- Designing and/or decorating a castle tower on CAD software.
- Constructing a range of 3D geometric shapes using nets.
- Creating special features for individual designs.
- Making facades from a range of recycled materials.
- Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison to the original design.
- Suggesting points for modification of the individual designs.
- *To understand that wide and flat-based objects are more stable.*
- *To understand the importance of strength and stiffness in structures.*

Year 4: Pavillions

- Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect.
- Building frame structures designed to support weight.
- Creating a range of different shaped frame structures.
- Making a variety of free-standing frame structures of different shapes and sizes.
- Selecting appropriate materials to build a strong structure and cladding.
- Reinforcing corners to strengthen a structure.
- Creating a design in accordance with a plan.
- Learning to create different textural effects with materials.
- Evaluating structures made by the class.
- Describing what characteristics of a design and construction made it the most effective.
- Considering effective and ineffective designs.
- *To understand what a frame structure is.*
- *To know that a 'free-standing' structure is one which can stand on its own.*

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Mechanisms/mechanical systems	**Pupils should be taught to:** Design: Pupils should be taught to: 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-aid Make: Pupils should be taught to: 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: Pupils should be taught to: 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: Pupils should be taught to: 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	
	Expectation by the end of:	
	Year 3: Pneumatic toys • Designing a toy which uses a pneumatic system. • Developing design criteria from a design brief. • Generating ideas using thumbnail sketches and exploded diagrams. • Learning that different types of drawings are used in design to explain ideas clearly. • Creating a pneumatic system to create a desired motion. • Building secure housing for a pneumatic system. • Using syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy. • Selecting materials due to their functional and aesthetic characteristics.	**Year 4: Slingshot cars** • Designing a shape that reduces air resistance. • Drawing a net to create a structure from. • Choosing shapes that increase or decrease speed as a result of air resistance. • Personalising a design. • Measuring, marking, cutting and assembling with increasing accuracy. • Making a model based on a chosen design. • Evaluating the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance. • *Understand that all moving things have kinetic energy.* • *Understand that kinetic energy is the energy that something (object/person) has by being in motion.*

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	• Manipulating materials to create different effects by cutting, creasing, folding and weaving. • Testing and modifying the outcome, suggesting improvements.	• *Know that air resistance is the level of drag on an object as it is forced through the air.* • *Understand that the shape of a moving object will affect how it moves due to air resistance*
Electrical systems	**Pupils should be taught to:** Design: Pupils should be taught to: 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, crosssectional and exploded diagrams, prototypes, pattern pieces and computer-aid Make: Pupils should be taught to: 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: Pupils should be taught to: 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: Pupils should be taught to: 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	
	Expectation by the end of:	
	Year 3	**Year 4: Torches** • Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas. • Making a torch with a working electrical circuit and switch. • Using appropriate equipment to cut and attach materials. • Assembling a torch according to the design and success criteria. • Evaluating electrical products. • Testing and evaluating the success of a final product. • *Understand that electrical conductors are materials which electricity can pass through.*

		• *Understand that electrical insulators are materials which electricity cannot pass through.* • *Know that a battery contains stored electricity that can be used to power products.* • *Know that an electrical circuit must be complete for electricity to flow.* • *Know that a switch can be used to complete and break an electrical circuit.*
Cooking and nutrition	**Pupils should be taught to:** Design: Pupils should be taught to: 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, crosssectional and exploded diagrams, prototypes, pattern pieces and computer-aid Make: Pupils should be taught to: 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: Pupils should be taught to: 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. Cooking & Nutrition: 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.	
	Expectation by the end of:	
	<u>Year 3: Eating seasonally</u> • Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish. • Knowing how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination. • Following the instructions within a recipe. • Establishing and using design criteria to help test and review dishes.	• **<u>Year 4: Adapting a recipe</u>** • Following a baking recipe, from start to finish, including the preparation of ingredients. • Cooking safely, following basic hygiene rules. • Adapting a recipe to improve it or change it to meet new criteria (e.g. from savoury to sweet). • Evaluating a recipe, considering: taste, smell, texture and appearance. • Describing the impact of the budget on the selection of ingredients. • Evaluating and comparing a range of food products.

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	• Describing the benefits of seasonal fruits and vegetables and the impact on the environment. • Suggesting points for improvement when making a seasonal tart. • *Know that not all fruits and vegetables can be grown in the UK.* • *Know that climate affects food growth.* • *Know that vegetables and fruit grow in certain seasons.* • *Know that cooking instructions are known as a 'recipe'.* • *Know that imported food is food which has been brought into the country.* • *Know that exported food is food which has been sent to another country.* • *Understand that imported foods travel from far away and this can negatively impact the environment.* • *Know that each fruit and vegetable gives us nutritional benefits because they contain vitamins, minerals and fibre.* • *Understand that vitamins, minerals and fibre are important for energy, growth and maintaining health.* • *Know safety rules for using, storing and cleaning a knife safely.* • *Know that similar coloured fruits and vegetables often have similar nutritional benefits.*	• *Know that the amount of an ingredient in a recipe is known as the 'quantity.'* • *Know that it is important to use oven gloves when removing hot food from an oven.* • *Know the following cooking techniques: sieving, creaming, rubbing method, cooling.* • *Understand the importance of budgeting while planning ingredients*
Textiles	**Pupils should be taught to:** Design: Pupils should be taught to: 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, crosssectional and exploded diagrams, prototypes, pattern pieces and computer-aid Make: Pupils should be taught to: 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: Pupils should be taught to: 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.	
	Expectation by the end of:	
	<u>Year 3: Cross stitch</u> • Selecting and cutting fabrics with ease using fabric scissors.	**<u>Year 4: Fastenings</u>** • Measuring, marking and cutting fabric using a paper template.

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	• Threading needles with greater independence. • Tying knots with greater independence. • Sewing cross stitch to join fabric. • Decorating fabric using appliqué. • Evaluating an end product	• Selecting a stitch style to join fabric. • Working neatly by sewing small, straight stitches. • Incorporating a fastening to a design. • *To know that a fastening is something which holds two pieces of material together for example a zipper, toggle, button, press stud and velcro.* • *To know that different fastening types are useful for different purposes.*
Digital world	**Pupils should be taught to:** Design: Pupils should be taught to: 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, crosssectional and exploded diagrams, prototypes, pattern pieces and computer-aid Make: Pupils should be taught to: 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: Pupils should be taught to: 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: Pupils should be taught to: 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	
	Expectation by the end of:	
	Year 3: wearable technology • Problem solving by suggesting potential features on a Micro: bit and justifying my ideas. • Developing design ideas for a technology pouch. • Drawing and manipulating 2D shapes, using computer-aided design, to produce a point of sale badge. • Using a template when cutting and assembling the pouch. • Following a list of design requirements. • Selecting and using the appropriate tools and equipment for cutting, joining, shaping and decorating a foam pouch. • Applying functional features such as using foam to create soft buttons.	**Year 4.**

	• Writing a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm. • Analysing and evaluating an existing product. • Identifying the key features of a pouch. • *Understand that, in programming, a 'loop' is code that repeats something again and again until stopped.* • *Know that a Micro: bit is a pocket-sized, codeable computer.*	

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UPPER KEY STAGE TWO

Structures

Pupils should be taught to:

Design: Pupils should be taught to: 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, crosssectional and exploded diagrams, prototypes, pattern pieces and computer-aid

Make: Pupils should be taught to: 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: Pupils should be taught to: 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: Pupils should be taught to: 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

Expectation by the end of:

	<u>Year 6: Playground</u> • Designing a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs. • Building a range of play apparatus structures drawing upon new and prior knowledge of structures. • Measuring, marking and cutting wood to create a range of structures. • Using a range of materials to reinforce and add decoration to structures. • Improving a design plan based on peer evaluation. • Testing and adapting a design to improve it as it is developed. • Identifying what makes a successful structure. • *To know that structures can be strengthened by manipulating materials and shapes.*

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Pupils should be taught to:

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	Design: Pupils should be taught to: 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, crosssectional and exploded diagrams, prototypes, pattern pieces and computer-aid Make: Pupils should be taught to: 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: Pupils should be taught to: 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: Pupils should be taught to: 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
	Expectation by the end of:
	Year 5: Pop up book • Designing a pop-up book which uses a mixture of structures and mechanisms. • Naming each mechanism, input and output accurately. • Storyboarding ideas for a book. • Following a design brief to make a pop up book, neatly and with focus on accuracy. • Making mechanisms and/or structures using sliders, pivots and folds to produce movement. • Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result. • Evaluating the work of others and receiving feedback on own work. • Suggesting points for improvement. • *Know that mechanisms control movement.* • *Understand that mechanisms can be used to change one kind of motion into another.* • *Understand how to use sliders, pivots and folds to create paper-based mechanisms.*
	Pupils should be taught to:

Higher Walton CE Primary School – DT Curriculum Progression

	Design: Pupils should be taught to: 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, crosssectional and exploded diagrams, prototypes, pattern pieces and computer-aid Make: Pupils should be taught to: 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: Pupils should be taught to: 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: Pupils should be taught to: 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	
	Expectation by the end of:	
	<u>Year 5: Doodlers</u> • Identifying factors that could be changed on existing products and explaining how these would alter the form and function of the product. • Developing design criteria based on findings from investigating existing products. • Developing design criteria that clarifies the target user. • Altering a product's form and function by tinkering with its configuration. • Making a functional series circuit, incorporating a motor. • Constructing a product with consideration for the design criteria. • Breaking down the construction process into steps so that others can make the product. • Carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses. • Determining which parts of a product affect its function and which parts affect its form. • Analysing whether changes in configuration positively or negatively affect an existing product. • Peer evaluating a set of instructions to build a product. • *Know that series circuits only have one direction for the electricity to flow.*	

	• *Know when there is a break in a series circuit, all components turn off.* • *Know that an electric motor converts electrical energy into rotational movement, causing the motor's axle to spin.* • *Know a motorised product is one which uses a motor to function.*	
Cooking and nutrition	**Pupils should be taught to:** Design: Pupils should be taught to: 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, crosssectional and exploded diagrams, prototypes, pattern pieces and computer-aid Make: Pupils should be taught to: 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: Pupils should be taught to: 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. Cooking & Nutrition: 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.	
	Expectation by the end of:	
	<u>Year 5: Developing a recipe</u> • Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients. • Writing an amended method for a recipe to incorporate the relevant changes to ingredients. • Designing appealing packaging to reflect a recipe. • Cutting and preparing vegetables safely. • Using equipment safely, including knives, hot pans and hobs. • Knowing how to avoid cross-contamination. • Following a step by step method carefully to make a recipe. • Identifying the nutritional differences between different products and recipes. • Identifying and describing healthy benefits of food groups. • *Understand where meat comes from - learning that beef is from cattle and how beef is reared and processed, including key welfare issues.*	

	• *Know that I can adapt a recipe to make it healthier by substituting ingredients.* • *Know that I can use a nutritional calculator to see how healthy a food option is.* • *Understand that 'cross-contamination' means bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects.*	
Textiles	**Pupils should be taught to:** Design: Pupils should be taught to: 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, crosssectional and exploded diagrams, prototypes, pattern pieces and computer-aid Make: Pupils should be taught to: 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: Pupils should be taught to: 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.	
	Expectation by the end of:	
		<u>Year 6: Waistcoat</u> • Designing a waistcoat in accordance to a specification linked to set of design criteria. • Annotating designs, to explain their decisions. • Using a template when cutting fabric to ensure they achieve the correct shape. • Using pins effectively to secure a template to fabric without creases or bulges. • Marking and cutting fabric accurately, in accordance with their design. • Sewing a strong running stitch, making small, neat stitches and following the edge. • Tying strong knots. • Decorating a waistcoat, attaching features (such as appliqué) using thread. • Finishing the waistcoat with a secure fastening (such as buttons). • Learning different decorative stitches. • Sewing accurately with evenly spaced, neat stitches.

		• Reflecting on their work continually throughout the design, make and evaluate process. • *Understand that it is important to design clothing with the client/ target customer in mind.* • *Know that using a template (or clothing pattern) helps to accurately mark out a design on fabric.* • *Understand the importance of consistently sized stitches.*
Digital world	**Pupils should be taught to:** Design: Pupils should be taught to: 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-aid Make: Pupils should be taught to: 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: Pupils should be taught to: 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: Pupils should be taught to: 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	
	Expectation by the end of:	
		Year 6: Navigating the world • Writing a design brief • Developing a design criteria • Developing a product idea through annotated sketches • Placing and manoeuvring 3D objects using CAD • Considering materials and their functional properties especially those that are sustainable and recyclable • Explain material choices • Programme a N.E.S.W cardinal compass • Explain how the program fits the design criteria • Develop an awareness of sustainable design • Explain the key functions and features of the navigation tool • Demonstrate a functional program • *Know that accelerometers detect movement*

		• *Understand that sensors can be useful* • *Know that designers write design briefs and develop design criteria* • *Know what multifunctional means*