Heelands School
Design and Technology Progression Map

Intent

At Heelands School our design and technology curriculum is designed to prepare children for the developing world. The subject encourages children to become creative problem-solvers, both as individuals and as part of a team. Through the study of design and technology children combine practical skills with an understanding of aesthetic, social and environmental issues, in order to design and make a product. Evaluation is an integral part of the design process and allows children to adapt and improve their product, this is a key skill which they need throughout their life. Design and Technology helps all children to become discriminating and informed consumers and potential innovators while being exposed to the cultural capital from which they can draw in the future.

We feel that the teaching of food and nutrition is of great importance and holds great relevance in current times. For this reason, children will study a food and nutrition unit every year. By instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.

Implementation

At Heelands School our design and technology curriculum is built around essential knowledge, understanding and key skills. These are broken into year group expectations and show clear continuity and progress. All teaching of design and technology follows the design, make and evaluate cycle. The design process should be relevant in context, to give meaning to learning. While making, children should be given choice and a range of tools to choose freely from. When evaluating, children should be able to evaluate their own products against a design criteria. Each of these steps should be rooted in technical knowledge and vocabulary.

Foundation Stage

During the EYFS pupils explore and use a variety of media and materials through a combination of child initiated and adult directed activities. They have the opportunities to learn to:

- Use different media and materials to express their own ideas
- Use what they have learnt about media and materials in original ways, thinking about form, function and purpose •
- Make plans and construct with a purpose in mind using a variety of resources Develop skills to use simple tools and techniques appropriately, effectively and safely
- Select appropriate resources for a product and adapt their work where necessary
- Cook and prepare food adhering to good health and hygiene routines

Children in the Foundation Stage are assessed against the Early Years Framework.

Key Stage 1

Pupils in Key Stage 1 will 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 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, as well as chopping and slicing) accurately.
- Select from and use a wider range of materials, ingredients and components, including construction materials, textiles and ingredients, according to their functional properties, aesthetic qualities and, where appropriate, taste.

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.
- Understand and use electrical systems in their products.
- Apply their understanding of computing to program, monitor and control their products
- Understand some of the ways that food can be processed and the effect of different cooking practices (including baking and grilling)

Impact

What will this look like?

By the time children leave our school they will:

- An excellent attitude to learning and independent working.

- The ability to use time efficiently and work constructively and productively with others.
- The ability to carry out thorough research, show initiative and ask questions to develop an exceptionally detailed knowledge of users' needs.
- The ability to act as responsible designers and makers, working ethically, using finite materials carefully and working safely.
- A thorough knowledge of which tools, equipment and materials to use to make their products.
- The ability to apply mathematical knowledge and skills accurately.
- The ability to manage risks exceptionally well to manufacture products safely and hygienically.
- A passion for the subject.

Curriculum Expectations

Foundation Stage

Creating with Materials ELG

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.

Fine Motor Skills ELG

Children at the expected level of development will:

- Hold a pencil effectively in preparation for fluent writing
– using the tripod grip in almost all cases;
- Use a range of small tools, including scissors, paint brushes and cutlery;
- Begin to show accuracy and care when drawing.

Key Stage 1 National Curriculum Expectations

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 and school, gardens and playgrounds, the local community, industry and the wider environment].

When designing and making, 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]
- select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics

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.

Evaluate

- explore and evaluate a range of existing products
- evaluate their ideas and products against design criteria

Cooking and Nutrition

As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life. Pupils should be taught to:

- use the basic principles of a healthy and varied diet to prepare dishes
- understand where food comes from

Skills Progression in Foundation Stage and KS1

Strand	Foundation Stage	Year 1	Year 2
Design	When designing and making, 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		
	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.) Explore, use and refine a variety of artistic effects to express their ideas and feelings.	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. Use knowledge of existing products to support plans for a similar product Describe, explore and investigate products that have been disassembled Use construction kits, pictures, templates, mock-ups and captions to plan and design Talk about and describe the tools needed in order to complete the key tasks within a plan	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. Use knowledge of a range of products to inform plans and designs Talk about and disassemble products and describe their function Use simple prototypes, labelled sketches and detailed instructions in plans and designs Talk in depth about ideas, plans and reasons for choices
CP Challenge Questions	What have you made? How have you made it?	What are you going to make? What is it for? How will it work? Can you draw a picture to design what you will make? Can you describe what tools you will need to make your object?	
Make	When designing and making, children should be taught to: **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		

	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, 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. Create collaboratively, sharing ideas, resources and skills. ELG Use a range of small tools, including scissors and paintbrushes. (Physical dev) ELG Make use of props and materials when role-playing characters in narratives and stories.	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 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. Explore and talk about the characteristics of an increasing range of materials. Select and use simple tools to cut and join a range of materials. Use a straight edge to mark lines for cutting. Join edge to edge using glue. Curl paper. Use a hole punch and stapler. Select from a range of finishes to improve the appearance of a product. Follow procedures for safety and hygiene.	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. 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. Select materials and components according to known characteristics and functions. Select and use and increasing range of tools to cut, shape and join materials and components. Use a rule to measure and mark lines for cutting Make and use gluing tabs. Make simple paper models, mock-ups and templates. Select and appropriate way to improve the appearance of a product. Follow procedures for safety and hygiene.
CP Challenge Questions	What tools have you used? How do you use the equipment safely?	What are you making? Why? What tools do you need to cut (shape, join or finish) your object? Can you measure how much 'x' you will need to make your object? What materials could you use to make 'x'? How can we work safely? What can we do to make sure our hands are clean? Can you use a ruler to make a straight edge? Can you use a hole punch and a stapler?	
Technical Knowledge	Children should be taught to: **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.		
		Begin to measure and join materials, with some support. Describe differences in materials. Suggest ways to make material/product stronger. Begin to use levers or sliders. Begin to use wheels and understand about axles. Measure, cut and join textiles to make a product, with some support. Choose suitable textiles.	Measure materials. Describe some different characteristics of materials. Join materials in different ways. Use joining, rolling or folding to make it stronger. Use own ideas to try to make product stronger. Use levers or slides. Use wheels and begin to use axles. Measure textiles. Join textiles together to make a product, and explain how I did it. cut textiles to produce accurate pieces. Explain choices of textile. Understand that a 3D textile structure can be made from two identical fabric shapes.
CP Challenge Questions		With support, can you measure your materials? What can you use to measure it? How could you join your materials together? What is the difference between your materials? Can you use a lever or a slider? Can you use wheels on your object? Or axles?	

Evaluate	Children should be taught to: **Evaluate** explore and evaluate a range of existing products evaluate their ideas and products against design criteria		
	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. Describe textures. Return to and build on their previous learning, refining ideas and developing their ability to represent them. ELG Share their creations, explaining the process they have used	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. Talk about and describe key features of a range of products. Explore and evaluate a range of existing products. Begin to evaluate the success of products in terms of function and aesthetic criteria.	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. Investigate and compare and range of existing products. Compare and contrast the similarities and differences of products with the same function. Evaluate ideas and products against design criteria; and suggest ways in which products can be improved.
CP Challenge Questions	How does your creation work? How are they different/similar? What does it feel like? Can you talk about what you have made?	Why have you chosen to make 'x'? What materials would be best to use for 'x'? Who would you make 'x' for? What is good about your product? What is not so good? How could you make the product better? What would you do differently next time?	
Cooking and Nutrition	Pupils should be taught to: • use the basic principles of a healthy and varied diet to prepare dishes • understand where food comes from		
	Begin to understand some food preparation tools, techniques and processes. Practise stirring, mixing, pouring, blending. Discuss how to make an activity safe and hygienic. Discuss use of senses. Understand need for variety in food. Begin to understand that eating well contributes to good health.	Describe textures. Wash hands and 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 grate safely, with support.	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.
CP Challenge Questions	How do we use the equipment safely? What types of foods are good for you? Why do we need to clean and wash our hands?	What does 'x' taste like? How can we keep ourselves and the areas clean and hygienic when we're cooking? Why is this important? Can you use adjectives to describe the different tastes of food? E.g sweet, salty etc. Where do our foods come from? How could we make the food look more exciting? What foods are healthy? How can we use equipment safely?	
Key Vocabulary			
	Foundation Stage	**KS1**	

Design	plan draw ideas design	plan prepare design materials ideas use model development market research survey template planning investigating design evaluate make user purpose ideas product
Make/Technical Knowledge	make build combine join shape tools complete product final	fast slow faster slower up down turn wind up design draw sketch tools fix glue attach features brick wood stone cloth metal foam felt paper tissue newspaper cardboard string wool clay scissors glue tape cut stick decorate
Evaluate	change like dislike next time better • worse different instead	change improve prefer useful unsuccessful future progress modify alter adapt original finished article evaluate graphics
Cooking and Nutrition	Recipe scales mix oven ingredients	healthy unhealthy source fruit vegetables clean safe dirty unsafe amount recipe weight nutrients vegetarian dietary requirements soft juicy crunchy sweet sticky smooth sharp crisp sour hard flesh skin seed pip core slicing peeling cutting squeezing choosing

DT Long Term Plan

Foundation Stage					
Autumn 1 Ourselves	**Autumn 2** Julia Donaldson and Festivals	**Spring 1** Space	**Spring 2** People Who Help Us	**Summer 1** Traditional Tales	**Summer 2** Minibeasts
Key Question: How do I use the resources safely and effectively? How can I join two resources together? Can I design my own product? **Key Vocabulary:** types of fastenings, resources, attach,	(Cooking- Gruffalo biscuits) **Key Question:** What are we making and how can we do it? What Ingredients do I need? Can I follow a recipe? **Key Vocabulary:** Ingredients, Measure, Scales, g, ml,	(Building/Making Spaceships) **Key Question:** How will I make my design? What resources can I use? How will I attach parts together) **Key Vocabulary:** Resources, Tools, Join	People Who Help us (using Hammers, nails and Saws) **Key Question:** How can I use the tools safely? Can I explain what the tools for used for and why we use them? **Key Vocabulary:** Hammer, Saw, Gloves, Safety	(cooking gingerbread men) **Key Question:** What are we making and how can we do it? What Ingredients do I need? Can I follow a recipe? **Key Vocabulary:** Ingredients, Measure, Scales, g, ml,	(Clay minibeasts) **Key Question:** Can I plan out my design? What tools will I use to make my design? **Key Vocabulary:** Design, Join, Tools, Model

Year 1					
Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Theme: Patchwork bags – Elmer day – use of threading string **DESIGN** Design purposeful, functional, appealing products based on design criteria Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and ICT and, where appropriate, information and communication technology **MAKE** Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] Select from and use a wide range of materials and components, including construction materials, textiles, ingredients according to their characteristics **TECHNICAL KNOWLEDGE** *Measure, cut and join textiles to make a product, with some support.* *Choose suitable textiles.* Key Questions: Can I practise my threading skills? Can I explore different textiles? Can I cut textiles?	Theme: Cooking (Christmas) **COOKING AND NUTRITION** use the basic principles of a healthy and varied diet to prepare dishes understand where food comes from. **DESIGN** Design purposeful, functional, appealing products based on design criteria Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and ICT and, where appropriate, information and communication technology **MAKE** Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] Select from and use a wide range of materials and components, including construction materials, textiles, ingredients according to their characteristics Key Questions: Can I say what healthy foods are? Can I say where some food comes from? ***Theme: Clay animals*** ***Key Questions:*** ***Can I select tools and equipment to cut, shape, join and finish?***	Theme: fruit salad – plan, label, make & evaluate. **COOKING AND NUTRITION** use the basic principles of a healthy and varied diet to prepare dishes understand where food comes from. **DESIGN** Design purposeful, functional, appealing products based on design criteria Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and ICT and, where appropriate, information and communication technology **MAKE** Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] Select from and use a wide range of materials and components, including construction materials, textiles, ingredients according to their characteristics Key Questions: Can I say what healthy foods are? Can I cut food safely? Can I say where some food comes from? Can I describe my design by using pictures, models mock ups and words?	Theme: Pop up cone **DESIGN** Design purposeful, functional, appealing products based on design criteria Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and ICT and, where appropriate, information and communication technology **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. Key Questions: Can I think of some ideas on my own? Can I explain what I want to do? Can I describe my design by using pictures, models mock ups and words?	Theme: Making sunglasses/ Design & evaluate. Tie dye product **DESIGN** Design purposeful, functional, appealing products based on design criteria Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and ICT and, where appropriate, information and communication technology **MAKE** Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] Select from and use a wide range of materials and components, including construction materials, textiles, ingredients according to their characteristics **TECHNICAL KNOWLEDGE** *Measure, cut and join textiles to make a product, with some support.* *Choose suitable textiles.* Key Questions: Can I design a product for myself and others following design criteria? Can I design a product for myself and others following design criteria?	Theme: Safari Binoculars **DESIGN** Design purposeful, functional, appealing products based on design criteria Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and ICT and, where appropriate, information and communication technology **MAKE** Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] Select from and use a wide range of materials and components, including construction materials, textiles, ingredients according to their characteristics **TECHNICAL KNOWLEDGE** *Measure, cut and join textiles to make a product, with some support.* *Choose suitable textiles.* Key Questions: Can I design a product for myself and others following design criteria? Can I design a product for myself and others following design criteria?

	Can I describe which tools I am using and why? ***Can I measure materials to use in a model or structure?*** ***Key Vocabulary:*** ***Model, tools,*** ***MORE ART than DT???***	Can I talk about my own work and things that other people have done?			
Year 2					
Autumn 1 Pirates	**Autumn 2** Great Fire of London	**Spring 1** Space	**Spring 2** Roald Dahl	**Summer 1** Dinosaurs	**Summer 2** Knights and Castles
Construction and textiles: **Design and make a pirate flag-sewing** **DESIGN** Design purposeful, functional, appealing products based on design criteria. Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups – ***design a pirate clag which is personal to them*** **MAKE** Select from and use a range of tools and equipment to perform practical tasks – ***choose fabrics, thread and tools suitable for their project*** **TECHNICAL KNOWLEDGE** ***Measure materials for pirate flag*** ***Describe some different characteristics of materials.*** ***Join materials in different ways.*** ***Measure textiles. Join textiles together to make a product, and explain how I did it. cut textiles to produce accurate pieces. Explain choices of textile.*** **Key questions** Can I think of ideas and plan what to do next? Can I choose the best tools and materials? Can I give a reason why these are best tools or material? Can I describe my design by using pictures, diagrams model mock ups, words and ICT? Can I explain why they choose a certain textile?	**ART .FOCUS**	**Mechanisms:** **Design and make a moon Buggy – wheels and axles** **DESIGN** Design purposeful, functional, appealing products based on design criteria-***design own moon buggy using features from original buggies*** Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups-***draw the design and practise making a wheel/axle mechanism*** **TECHNICAL KNOWLEDGE** Build structures, exploring how they can be made stronger, stiffer and more stable Explore and use mechanisms – ***use the buggy and evaluate need for extra strength, mock up of wheels and axle*** ***MAKE*** Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] -***select own resources from a given selection to make the buggy practical and appealing*** Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics-***select correct resources to produce a realistic looking moon buggy*** **Key questions**	**Cooking:** **Pizzas** **COOKING AND NUTRITION** use the basic principles of a healthy and varied diet to prepare dishes understand where food comes from-***prepare a pizza, talk about what they are doing, how they do it and how to work safely*** **DESIGN** Design purposeful, functional, appealing products based on design criteria-***design a pizza using own choieof ingredient from a taste test and design it to look appealing*** **MAKE** Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]-**select tools and equipment needed from the kitchen (with support) and use them safely** Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics-***choose own ingredients for the pizza from within a given section and say why they have chosen them*** **Key questions** Can I join materials together as part of a moving product? Can I add a specific design to my product? Can I use axels and wheels in my work?	**ART FOCUS**	**Mechanisms:** **Make drawbridge using a winding mechanism.** **DESIGN** Design purposeful, functional, appealing products based on design criteria Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and ICT and, where appropriate, information and communication technology –**draw and label a design, make a mock up of the winding mechanism** **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.-***explore what they have made and decide why/how to make it stronger*** ***MAKE*** Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] -***select own resources from a given selection to make a castle with a winding mechanism, measuring and cutting with support where needed*** Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics-***select correct resources to produce a***

Can I join textiles together to make something? Can I measure textiles?		Can I explain what I am making and why my audience will like it? Can I join things (materials/components) together in different ways? Can I choose materials and explain why they are being used depending on their characteristics?			***realistic looking and working drawbridge*** **Key questions** Can I join materials together as part of a moving product? Can I add a specific design to my product? Can I use axels and wheels in my work?

Evaluate-All Units

EVALUATE Explore and evaluate a range of existing products Evaluate ideas and products against design criteria	Can they assess how well their product works? Can they use like and dislike when evaluating or describing? Do they recognise what they have done well and talk about what could be improved? Can they seek out the views and judgements of others? Can they predict how changes might improve the finished product? Have they used digital photography to present design or finished work?

Foundation Stage	Year 1	Year 2
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. Describe textures.	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.