Attleborough Primary Curriculum Intent for Design and Technology

At APS our Design and Technology curriculum aims to inspire children through a broad range of practical experiences to create innovative designs which solve real and relevant problems within a variety of different contexts. Each sequence of lessons ensures the key skills required in the National Curriculum are progressively covered. Each unit commences with children critically evaluating existing products leading to innovating when designing and creating solutions to problems. Time is built in to reflect, evaluate and improve on prototypes using design criteria throughout to support this process. Opportunities are provided for children to evaluate key events and individuals who have helped shape the world, showing the real impact of design and technology on the wider environment and helping to inspire children to become the next generation of innovators. Children will also develop an understanding of the importance of other subjects in the curriculum to design technology eg: maths, art, science and computing.

EYFS Statutory Framework Design and Technology Related Objectives
Creating with materials • 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 **Develop fine Motor Skills** • Use a range of small tools, including scissors, paint brushes and cutlery • Begin to show accuracy and care when drawing
RECEPTION Key content knowledge.
Core Knowledge 1. Know how to build models using construction equipment with a purpose in mind 2. Know different techniques for joining materials, such as how to use adhesive tape, treasury tags, paper clips and different sorts of glue. 3. Know how to use simple tools and techniques competently and appropriately 4. Know how to select the tools and techniques they need to assemble, shape and join materials that they are using 5. Build and construct with a wide range of objects, selecting appropriate resources and adapting their work when necessary. Skills: - Pupils will understand that different materials can be used for construction. - Pupils will develop being able to use tools safely and effectively - Pupils will start to understand how their work can be improved/work better
Key Vocabulary
build, construct, design, join, plan, purpose, tools,
Enrichment Opportunities
Being able to use a range of materials for junk modelling and construction. Using the cookery room from cooking and preparing food Celebrating their work and ideas with others

National Curriculum aims:

The national curriculum for design and technology aims to ensure that all pupils:

- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
- critique, evaluate and test their ideas and products and the work of others
- understand and apply the principles of nutrition and learn how to cook.

Key Stage 1 National Curriculum Objectives
Through a variety of creative anprd actical 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 [eg: the home, school, gardens, 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 & communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information/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 **Evaluate** • explore and evaluate a range of existing products • evaluate their ideas and products against design criteria **Technical knowledge** • build structures, exploring how they can be made stronger, stiffer and more stable • explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products. **Cooking and nutrition** • use the basic principles of a healthy and varied diet to prepare dishes • understand where food comes from.

Year 1 Key content knowledge.		
Autumn Term	Spring Term	Summer Term
Unit: **Mechanisms – sliders and levers flap book** **Design, make and evaluate a mini pop-up book for themselves for entertainment purposes** Core Knowledge 1. Pupils will be familiar with a range of card levers and sliders. 2. Pupils will know how to cut, shape and join using scissors, glue and tape. 3. Pupils will know why sliders/levers are used in books. 4. Pupils will know how some sliders work. 5. Pupils will know how some levers work. 6. Pupils will know how to make a page with both a slider and lever component. Skills: -Pupils will be able to generate ideas based on simple design criteria for their pop-up books -Pupils will be able to use tools to cut and shape safely -Pupils will be able to evaluate their pop-up book in relation to its purpose (to entertain) Designer/Architect: Various authors and illustrators	Unit: **Structures – Freestanding structures** **Design, make and evaluate an enclosure for a zoo animal** Core Knowledge 1. Pupils will know what a designer is and why people have to design products (purpose) 2. Pupils will be familiar with a range of examples of freestanding structures. 3. Pupils will know how to design/plan by rawing. 4. Pupils will know how to use basic tools to build frames. 5. Pupils will know how to make a hinge flap. 6. Pupils will know how to make their structure stronger, stiffer and more stable. Skills: -Pupils will develop being able to design and make a their own free-standing structure • Pupils will develop being able to evaluate their project – what worked well Designer/Architect: Isambard Kingdom Brunel	Unit: **Food – preparing fruit** **Design, make and evaluate a fruit salad for their class for a picnic** Core Knowledge 1. Pupils will know examples of common fruits 2. Pupils will know how to describe fruits using their senses. 3. Pupils will know what we must do before we prepare food 4. Pupils will know how to prepare food safely. 5. Pupils will know how to express our opinion when trying new things. 6. Pupils will know why it is important to have fruit as part of our everyday diet. Skills: -Pupils will design and make their own fruit salad. -Pupils will be able to use a range of kitchen utensils safely. -Pupils will develop being able to evaluate their product by enjoyment of taste, colour and texture.
Key Vocabulary		
slider, lever, pivot, join, pull, push, design, evaluate, user, purpose, design criteria, product, function	cut, fold, join, fix, structure, framework, base, edge, surface, corner, metal, wood, plastic,	names of equipment and utensils, slicing, peeling, cutting, squeezing.
Enrichment Opportunities		
Visit local library or explore and evaluate a selection of mechanism books, including those with levers and sliders. Share books with others	Go on a walk or look at photographs of the local area to explore structures eg: towers, playground equipment, street furniture, bridges. Label with the correct technical vocab for the structure/ materials	**Mathematics** – carry out a simple survey to find out which are the favourite fruits/vegetables; construct & interpret the information in pictograms/bar graphs.

Year 2 Key content knowledge.		
Autumn Term	Spring Term	Summer Term
Unit: **Mechanisms – wheels and axles** **Design, make and evaluate a moving vehicle for a reception child for playing with (London bus).** Core Knowledge: 1. Pupils will know what a wheel is. 2. Pupils will know what an axle is. 3. Pupils will know what an axle holder is. 4. Pupils will know the difference between fixed and freely moving axles. 5. Pupils will know how push/pull toys move through wheels and axles. 6. Pupils will know a range of joining and finishing techniques. Skills: -Pupils will be able to design a push/pull toy. -Pupils will know tool and equipment they will use. -Pupils will be able to cut and join materials. -Pupils will be able to evaluate and compare their product to their design Designer/Architect: George Shillibeer	Unit: **Food – preparing vegetables** **Investigative, Design, make and evaluate a pizza for themselves to eat at a party.** Core Knowledge: 1.Pupils will know a range of vegetables and toppings. 2.Pupils will know where vegetables come from. 3. Pupils will know what the Eatwell Plate is. 4. Pupils will know the technical vocabulary relevant to the project e.g., fruit, vegetable, knife. 5. pupils will know how to safely use cookery tools eg knives and peelers. 6. Pupils will know how to make dough and top with the chosen vegetables. Skills: -Pupils will be able to design a healthy meal - Pupils will be able to use equipment more accurately and safely -Pupils will be able to evaluate fruit and vegetables through taste	Unit: **Textiles – templates and joining techniques** **Design, Make and Evaluate puppet for story telling in reception**. **Core Knowledge** 1. Pupils will know what a puppet is. 2. Pupils will know the purpose of the product is. 3. Pupils will know how 3D textile products are made. 4. Pupils will know the different ways fabrics are joined together. 5. Pupils will know a range of different finishing techniques Skills: -Pupils will be able to design a functional and appealing product based on design criteria. -Pupils will be able to generate and develop ideas through talking and drawing. -Pupils will be able to use a range of tools for joining and finishing. -Pupils will be able to evaluate their ideas compared to their design Designer/Architect: Jim Henson
Key Vocabulary		
vehicle, wheel, axle, axle holder, chassis, body, cab, fixed assemble, cutting, joining, finishing, moving mechanism	slicing, peeling, cutting, squeezing, healthy diet	Joining, fabrics, template, pattern pieces, mark out, decorate, finish
Enrichment Opportunities		
Visit children in reception classes and research the vehicles that they like to play with.	visit a local pizzeria or invite a supermarket into school to talk about pizza toppings and designs	Invite a puppet show to visit the school or watch a show online. Children to explore and evaluate the different puppets used.

Key Stage 2 National Curriculum Objectives
Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment]. When designing and making, pupils should be taught to: **Design** • use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups • generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design **Make** • select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately • select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities **Evaluate** • investigate and analyse a range of existing products • evaluate their ideas and products against their own design criteria and consider the views of others to improve their work • understand how key events and individuals in design and technology have helped shape the world **Technical knowledge** • apply their understanding of how to strengthen, stiffen and reinforce more complex structures • understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] • understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] • apply their understanding of computing to program, monitor and control their products. Cooking and 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.

Year 3 Key content knowledge.		
Autumn Term	Spring Term	Summer Term
Unit: structures – shell structures. **Design, make and evaluate a keepsake box for ourselves for special items.** **Core Knowledge** 1. Pupils will investigate a collection of different shell structures 2.pupils will take a small package apart identifying parts of a net. 3. pupils will use kit parts with flat faces to construct nets and practise making nets out of card. 4. pupils will practice skills and techniques of scoring, cutting out and assembling using pre-drawn nets. 5. pupils will demonstrate how to use different ways of stiffening and strengthening their shell structures 6. Pupils will construct a simple box using a range of graphics and media to achieve the desired product. Skills: -Pupils will develop how to investigate a product for a given purpose -Pupils will learn how to make 3D object from a 2D net. - Pupils will score, cut and assemble with increasing accuracy -Pupils will develop finishing techniques for a purpose	Unit: food – a healthy and varied diet **Design, make and evaluate a sandwich for ourselves for healthy living.** **Core Knowledge** 1. pupils will investigate a range of food products e.g. the content of their lunchboxes over a week, 2. Gather information about existing products available relating to your product. 3. pupils will select and use a range of utensils suitable to their task. 4. pupils will understand basic food hygiene practices when handling food. 5. pupils will design and make their healthy sandwich. Skills: -Pupils will investigate healthy food products -Pupils will select the correct tools to complete a task -Pupils will learn basic food and kitchen hygiene -Pupils will plan and design an healthy sandwich and annotate with exploding diagrams	Unit: textiles- 2D shape and 3D product Design, make and evaluate a pencil case for myself to carry things. **Core Knowledge** 1.Pupils will investigate a range of textile products that have a selection of stitches, joins, fabrics, finishing techniques and fastenings. 2.Pupils will demonstrate a range of stitching techniques and practise sewing two small pieces of fabric together, 3.pupils will use a textile product they have taken apart to create a paper pattern using 2-D shapes. 4.Pupils will design and make a pencil case suitable for holding items. Skills: -Pupils will learn different stiches to join 2 pieces of fabric together. -pupils will learn how a textile product is made from a paper template/pattern
Key Vocabulary		
shell structure, 3-D shape, net, length, width, breadth, capacity, marking out, scoring, tabs, adhesives, joining, assemble, stiff, prototype	utensils, texture, appearance, fresh, savoury, hygienic, reared, caught, frozen, tinned, processed, seasonal, harvested	fabric, fastening, compartment, zip, button, finishing technique, templates, stitch, seam, seam allowance, annotated sketch, functional, aesthetics, function.
Enrichment Opportunities		
	Complete a survey at home, amongst families to find Attleborough favourite sandwich filling. Invite Tim, the baker, in to make different types of bread.	

Year 4 Key content knowledge.		
Autumn Term	Spring Term	Summer Term
Unit: mechanisms – levers and linkages **Design, make and evaluate a greetings card for my family** **Core Knowledge** 1. pupils will investigate, analyse and evaluate a range of lever and linkage mechanisms 2. Pupils will use annotated sketches and prototypes to develop, model and communicate their ideas. 3. pupils will safely and accurately measure and use cutting and joining skills and techniques. 4.Pupils will consider the main stages in making before assembling their card 5.Pupils will evaluate their final products against the intended purpose and with the intended user. Skills -Pupils will investigate a range of mechanisms in pop-up books/cards and in real-life -Develop making prototypes with increasing accuracy -Pupils will use tools confidently -Pupils will evaluate against intended purpose/user	Unit: Food – healthy and varied diet **Design, make and evaluate a healthy meal for Mother's day.** **Core Knowledge** 1.pupils will investigate a range of food products (restaurant menus or food diary from home) 2.Pupils will evaluate the contents of a variety of bought food products and record results. 3.Pupils will find out how a variety of ingredients used in products are grown and harvested 4.Pupils will know the purpose of the product that they will be designing, generating a range of ideas. 5.Pupils will select and use a range of techniques as appropriate to prepare ingredients hygienically. 6.Pupils will make and evaluate their chosen dish. Skills -Pupils will be able to create a menu -Develop understanding of how food is produced -Pupils will follow hygiene rules -Pupils will understand how a dish could be improved based on taste and aesthetics.	Unit: Electrical systems – simple circuits and switches **Design, make and evaluate an illuminated sign for myself for home.** **Core Knowledge** 1.Pupils will investigate different types of electrical switches. 2.Pupils will make a variety of switches, using classroom equipment. 3.pupils will generate a selection of battery powered designs eg, named door sign, logo design. 4.pupils will draw annotated sketches of their illuminated design. 5.pupils will create their own, individual illuminated design. Skills -Pupils will develop their design ideas -Pupils will develop their annotations of sketches -Pupils will evaluate their produce against design criteria
Key Vocabulary		
mechanism, lever, linkage, pivot, slot, input, process, output, linear, rotary, oscillating,	preference, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested	toggle switch, push-to-make/break switch, battery/holder, bulb/holder, wire, insulator, conductor, crocodile clip, control, program, system, input device, output device
Enrichment Opportunities		
Exploring/sharing mechanisms in products eg: books/cards. Sharing their own product with others.	Use of cookery room to prepare food	Access to electrical equipment

Year 5 Key content knowledge.		
Autumn Term	Spring Term	Summer Term
Unit: Structures - Frame structures **Design, Make and Evaluate frame structure for a building for an ancient Greek.** **Core Knowledge** 1. Pupils will understand design specifications. 2. Pupils will generate, develop and model ideas, through discussion, prototypes and sketches. 3. Pupils formulate a clear plan, including a step-by-step list of what needs to be done. 4.Pupils will select tools to accurately measure, mark out, cut, shape and join construction materials. 5. Pupils will use finishing and decorative techniques suitable for their design. **Skills:** -Pupils will be able to investigate and evaluate a range of existing frame structures -Pupils will be able to recognise the correct type of materials to suit the product -Pupils will be able to test their structures and evaluate against a set criteria **Designer/Architect**: Ancient Greeks	**Unit: Food: Celebrating culture and seasonality.** **Design, make and evaluate a savoury French item for our class for a French market experience** **Core Knowledge** 1.pupils will investigate a range of food products. 2.Pupils will evaluate the contents of a variety of French food products and record results. 3.Pupils will find out how a variety of ingredients used in products are grown and harvested 4.Pupils will know the purpose of the product that they will be designing, generating a range of ideas. 5.Pupils will select and use a range of techniques as appropriate to prepare ingredients hygienically. 6.Pupils will make and evaluate their chosen dish. **Skills:** -Pupils will be able to select and use appropriate equipment accurately to measure and combine ingredients. -Pupils will be able to evaluate using a range of relevant products and ingredients, and record the evaluations using e.g. tables/graphs/charts	**Unit: Mechanical systems- Pulleys Focused tasks** **Design, make and evaluate a moveable toy for younger children.** **Core Knowledge** 1.Pupils will generate ideas by carrying out research. 2. Pupils will develop a simple design specification 3. Pupils will develop through discussion and annotated drawings 4. Pupils will select equipment to make products that are accurately assembled and well finished. 5. Pupils will compare the final product to the original design specification 6. Pupils will know that gears and pulleys can be used to speed up, slow down or change the direction of movement **Skills:** -Pupils will develop being able to produce detailed lists of tools, equipment and materials and instructions. -Pupils will develop being able to critique and evaluate their product
Key Vocabulary		
frame structure, stiffen, strengthen, reinforce, triangulation, stability, join, temporary, permanent	savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal	pulley, drive belt, gear, rotation, spindle, driver, follower, transmit, axle, motor circuit, switch, circuit diagram, mechanical /electrical system
Enrichment Opportunities		
Visit to Fitzwilliam museum in Cambridge to look at Ancient Greek inspired architecture		

Year 6 Key content knowledge.		
Autumn Term	Spring Term	Summer Term
Unit: Textiles- combining different fabrics **Design and Make Assignment – Make do & mend** **Core Knowledge** 1. Pupils will collect data to generate design ideas 2. Pupils will communicate and draw a design prototype that is purposeful 3. Pupils will create a step-by-step plan 4. Pupils will choose the appropriate materials and tools for the task 5. Pupils will do basic stitching of fabrics to create patterns 6. Pupils will evaluate their finished piece of work and critique it against their initial design. **Skills** -Pupils will be able to articulate how their product is made by using a step-by-step approach -Pupils will develop being able to justify the materials, tools and techniques they are using -Pupils will develop being able to evaluate their work and compare it to their initial plans **Designer/Architect:** WW2 examples	**Unit: Food – celebration culture and seasonality** **Design, make and evaluate a savoury product for an event** **Core Knowledge** 1. Pupils will know the importance of food and hygiene, and nutrition 2. Pupils will generate ideas through research and discussion 3. Pupils will explore a range of initial ideas and make design decisions to develop a final product. 4. Pupils will write a step-by-step recipe, including a list of ingredients, equipment and utensils 5. Pupils will make, decorate and present the food product appropriately for the intended user and purpose. 6. Pupils will evaluate their final product. **Skills** -Pupils will be able to select and use appropriate equipment accurately -Pupils will be able to use heat sources to prepare and cook food. -Pupils will be able to record the evaluations using e.g. tables/graphs/charts.	**Unit: Electrical system – monitoring and control** **Design, make and evaluate an electronic toy money box for a child for keeping money safe** **Core Knowledge** 1. Pupils will develop a design specification for a functional product that responds to changes in the environment. 2. Pupils will formulate a step-by step plan to guide making, listing tools, equipment, materials and components. 3. Pupils will securely connect electrical components to produce a reliable, functional product. 4. Pupils will know the essential characteristics of a series circuit and have experience of creating a battery-powered, functional, electrical product. **Skills** -Pupils will be able to create and modify a computer control program -Pupils will be able to apply understanding of computing to program, monitor & control products -Pupils will develop being able to evaluate, modify and test the working features of their product to match the initial design specification
Key Vocabulary		
seam, seam allowance, wadding, right/wrong side, hem, template, pattern pieces, pinking shears, needle, thread	yeast, dough, bran, wholemeal, unleavened, baking soda, carbohydrate, protein, vitamins, nutrients, nutrition,	light dependent resistor, tilt switch, LED, bulb holder, battery/holder, USB cable, wire, insulator, conductor, control, input/output device, series/parallel circuit
Enrichment Opportunities		

Invite a seamstress in to talk about their own work (Susan's work basket)	Access to cooker room. Sharing food for an event	Access to computer programming, microbits