

Being an Engineer at Barrs Court Primary



Barrs Court Primary School Design Technology Knowledge and Skills progression – Reception Yearly Overview

	Enquiry	EYFS objectives Expressive arts and design, creating with materials (Development Matters, Early Learning Goals)	Key Knowledge and vocabulary	Key skills
Term 1	Who are we?	(DM 4-5) Return to and build on their previous learning, refining ideas and developing their ability to represent them. (DM 4-5) Create collaboratively, sharing ideas, resources and skills. (ELG) Share their creations, explaining the process they have used.	Explore construction kits in the provision. Put various books in the area to inspire the children. Adults give children a brief to enhance Enquiry learning, eg can you build your house/school/Asda etc Adults to challenge children as appropriate, eg how can you make this structure stronger? Is it possible to make it taller? Can you build it to fit this figure/toy inside?	Begin to use the language of designing and making, e.g. join, build and shape. Learn about planning and adapting initial ideas to make them better Construct with a purpose in mind.
	What is darkness?	(DM 4-5) Return to and build on their previous learning, refining ideas and developing their ability to represent them. (DM 4-5) Create collaboratively, sharing ideas, resources and skills. (ELG) Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. (ELG) Share their creations, explaining the process they have used. (ELG) Make use of props and materials when role playing characters in narratives and stories	Explore torches – take them apart and rebuild them Shadow puppets Make salt dough diva lamps Rotate construction kits in provision	Begin to use the language of designing and making, e.g. join, build and shape. Select tools and techniques needed to shape, assemble and join materials Learn how to use a range of tools Learn how everyday objects work by dismantling things. Learn about planning and adapting initial ideas to make them better Construct with a purpose in mind. Begin to talk about changes made during the making process, e.g. making a decision to use a different joining method. Learn how to use a wider range of tools, e.g. scissors, hole punch, stapler, woodworking tools, rolling pins, pastry cutters.
Term 2	What stories do we know?	(DM 4-5) Return to and build on their previous learning, refining ideas and developing their ability to represent them. (DM 4-5) Create collaboratively, sharing ideas, resources and skills. (ELG) Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. (ELG) Share their creations, explaining the process they have used. (ELG) Make use of props and materials when role playing characters in narratives and stories	Make gingerbread men Rotate construction kits in provision	Learn how to use a range of tools Begin to understand some of the tools, techniques and processes involved in food preparation. Construct with a purpose in mind. Begin to talk about changes made during the making process, e.g. making a decision to use a different joining method. Learn how to use a wider range of tools, e.g. scissors, hole punch, stapler, woodworking tools, rolling pins, pastry cutters.
Term 3	What is a celebration?	(DM 4-5) Return to and build on their previous learning, refining ideas and developing their ability to represent them. (DM 4-5) Create collaboratively, sharing ideas, resources and skills. (ELG) Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. (ELG) Share their creations, explaining the process they have used. (ELG) Make use of props and materials when role playing characters in narratives and stories	Make a class lion for CNY celebration	Begin to use the language of designing and making, e.g. join, build and shape. Select tools and techniques needed to shape, assemble and join materials Learn how to use a range of tools Learn about planning and adapting initial ideas to make them better Construct with a purpose in mind. Begin to talk about changes made during the making process, e.g. making a decision to use a different joining method. Learn how to use a wider range of tools, e.g. scissors, hole punch, stapler, woodworking tools, rolling pins, pastry cutters.

Term 4	What is growing?	(DM 4-5) Return to and build on their previous learning, refining ideas and developing their ability to represent them. (DM 4-5) Create collaboratively, sharing ideas, resources and skills. (ELG) Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. (ELG) Share their creations, explaining the process they have used.	Design a scarecrow – make a class scarecrow	Begin to use the language of designing and making, e.g. join, build and shape. Select tools and techniques needed to shape, assemble and join materials Learn how to use a range of tools Learn how everyday objects work by dismantling things. Learn about planning and adapting initial ideas to make them better Construct with a purpose in mind. Begin to talk about changes made during the making process, e.g. making a decision to use a different joining method. Learn how to use a wider range of tools, e.g. scissors, hole punch, stapler, woodworking tools, rolling pins, pastry cutters.
Term 5	How do we care for our pets?	(DM 4-5) Return to and build on their previous learning, refining ideas and developing their ability to represent them. (DM 4-5) Create collaboratively, sharing ideas, resources and skills. (ELG) Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. (ELG) Share their creations, explaining the process they have used. (ELG) Make use of props and materials when role playing characters in narratives and stories	Use construction kits to make an enclosure for a pet	Begin to use the language of designing and making, e.g. join, build and shape. Select tools and techniques needed to shape, assemble and join materials Learn how to use a range of tools Learn how everyday objects work by dismantling things. Learn about planning and adapting initial ideas to make them better Construct with a purpose in mind. Begin to talk about changes made during the making process, e.g. making a decision to use a different joining method. Learn how to use a wider range of tools, e.g. scissors, hole punch, stapler, woodworking tools, rolling pins, pastry cutters.
Term 6	Who helps us?	(DM 4-5) Return to and build on their previous learning, refining ideas and developing their ability to represent them. (DM 4-5) Create collaboratively, sharing ideas, resources and skills. (ELG) Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. (ELG) Share their creations, explaining the process they have used. (ELG) Make use of props and materials when role playing characters in narratives and stories	Junk modelling emergency vehicles	Begin to use the language of designing and making, e.g. join, build and shape. Select tools and techniques needed to shape, assemble and join materials Learn how to use a range of tools Learn how everyday objects work by dismantling things. Learn about planning and adapting initial ideas to make them better Construct with a purpose in mind. Begin to talk about changes made during the making process, e.g. making a decision to use a different joining method. Learn how to use a wider range of tools, e.g. scissors, hole punch, stapler, woodworking tools, rolling pins, pastry cutters.

Barrs Court Primary School Design Technology Knowledge and Skills progression – Red Area Yearly Overview - Year A

	Enquiry	National Curriculum Objectives	Key Knowledge and vocabulary	Design Technology skills
Term 1	How are schools the same? (4)		ARTIST FOCUS	

Term 2				
	What could my classroom be made of? (5 weeks)	Engineering focus- DT 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 and mock-ups. 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. 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	Subject Link- Lead state of being is science so properties and use of materials will be incorporated into the Engineer planning. Focus engineer/ designer: Ole Kirk Christiansen. Lego designer 1949 Denmark. He chose materials that were suitable for building plastic models. <u>Vocabulary:</u> Design- research, dismantle, purposeful, functional, appealing, architecture/architect Make: net, construction, material, scoring, mark, Strengthen, stiffen, reinforced, building/builder Evaluate: analyse improve <u>Knowledge</u> Year 1 children will be using their knowledge of EYFS skills: cutting with scissors and fixing with tape and glue. They will need to build on these skills during this enquiry. Children know that designers have to plan their design, choose materials for a purpose, construct their design and evaluate the final product. Children talk about how to disassemble a cardboard or construction kit building structure, and know how this can form a template for their own design. Children can explain how to join materials using paper or card, glue or masking tape, holes and loops. Children can draw their own basic design based on a teacher’s model or using a previous design. Children can say why they have chosen a particular material in their design eg. Card or paper for stability and strength, consumable materials or combination of construction and consumable. Paint or collage materials for aesthetic appearance. Children can, with guidance, use flexible materials (paper/ card/ sheet plastic) to explore and make a free-standing structure, and apply suitable materials to the outside. Children can make comparisons between designs based on the stability of the construction and overall appearance. <u>Year 2</u> children will need to develop skills from ... Children know the design process; research design linked to enquiry outcome, investigate the use of materials for a purpose, discuss how a design structure could be incorporated into their own design. Children know how to disassemble a structure (construction or produced) to inform their design idea. These should include walls, buttresses, towers and frameworks. Children know how to create different joints: flange, slot, L brace, tabs, fold, and tie. Children can discuss different designs and give reasons for their choice of materials. Children can draw and label their own basic design. Children can select the joints to use in their final design to demonstrate their awareness of strength, stiffness and stability. Children can evaluate the design based on the use of materials for a purpose and the stability of the product. Children can make suggestions for future designs based on the evaluation of the product. Visitors: Architect and builder. Online resource: Architecture activities (RIBA architure.com)	Year 1 Design • Design a new space for a classroom. • Communicate their ideas through talking as a class, drawing templates. • Use construction materials to create mock-ups. • Make • • Use scissors and glue safely. • Build structures, exploring how they can be made stronger, stiffer and more stable. • Create model to meet enquiry outcome. • Evaluate designs. Year 2 Design • Design functional products for a classroom. • Communicate their ideas through talking as a class, drawing templates. • Use construction materials to create mock-ups. • Make • • Use scissors or cutting tools, glue, us an appropriate hole punch, glue gun under supervision to ensure it is used safely. • Build structures, exploring how they can be made stronger, stiffer and more stable. • Create model to meet enquiry outcome. • Evaluate designs.

			https://www.architecture.com/education-cpd-and-careers/learning/riba-national-schools-programme/learning-resources/learning-at-home	
	How can we help? (5)		Artist focus	
	What did Brunel do for Great Britain? (6)	Design ♣ design purposeful, functional products for themselves and other users based on design criteria ♣ Generate, develop, model and communicate their ideas through talking, drawing, templates and mock-ups. 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, according to their characteristics and strength. 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	Previous knowledge: EYFS: names of everyday classroom materials (paper, card, plastic, glass, metal), cutting equipment (scissors, knife), and fixings (tape, stapler, glue). Link to science teaching on the properties and use of materials- strength. Focus engineer/ designer: Isambard Kingdom Brunel. Leonardo da Vinci is perhaps most famous for the <i>Mona Lisa</i>, but as well as being an incredible artist he was also a scientist, inventor and mathematician. He is well known for his self-supporting bridge. One design to span across the Golden Horn in Istanbul wasn't built at the time, but the same design was used to build a footbridge in Norway! How incredible that a bridge design from 1502 was used to build a bridge in 2001. <u>Vocabulary:</u> engineer, engineering Design- component structure, bridge, suspension, beam, arch, cantilever. Make: rigid material, components, construction, control, strengthen, beam, truss Evaluate: analyse improve/improvement, evaluation <u>Knowledge:</u> Children can apply previous knowledge to explain their design choices. <u>Year 1</u> - Children can name and describe; a road bridge, footbridge and Railway Bridge. - Children can evaluate existing products (bridge designs), by answering questions; which do you like best? Why? What materials are they made of and why? How do they stand up by themselves? How have the parts been joined together? - They know how a beam bridge (girder) is constructed. - Children can draw a design using their constructed bridge. - Children can assemble, join and combine materials; this can include construction kits for mock-ups. - Children can use non-standard or standard measures to measure and cut materials. (Card or with assistance wooden rods) - Children know how to work as a construction team. - Children can evaluate their own products by answering questions: How can you use a construction kit? How did you make your structure stand up on its own? How did you join the parts together? How can you make it stable? <u>Year 2</u> Children can name different types of bridge; - Arch Bridge. - Beam Bridge. - Cantilever Bridge. - Suspension Bridge. - Truss Bridge. - Rope bridge - Children can evaluate existing products (bridge designs), by answering questions; what are the structures called? What materials have been chosen	Year 1 Design - Design a bridge for themselves that will hold a given weight. - Communicate their ideas through talking. - Use construction materials to create mock-ups. - Communicate their ideas through talking as a class, drawing templates. - Draw a design after constructing a beam bridge. Make - Use scissors and glue safely. - Build structures, exploring how they can be made stronger, stiffer and more stable. - Create model to meet enquiry outcome. - Evaluate designs based on their individual likes and dislikes. Year 2 Design - Children can investigate different designs and then use this to inform their design. - Design a bridge for another group of children to apply a given weight. - Communicate their ideas through talking as a class, drawing templates. - Use construction materials and recycled materials to create mock-ups. Make - Use scissors, craft knife, saw, glue, glue gun (with adult support) sandpaper. - Children can make different joins independently before selecting the joins to use in their final design. (Include annotations linked to the teachers modelling) - Children can develop techniques by for example joining rope and creating knots. - Children build structures, exploring how they can be made stronger, stiffer and more stable. Use Joining together – Using paper or card, you could use strong glue, stapling, paper clips or strong tape to join pieces together. Rolling - Rolling paper or card into tubes can produce a strong structure. You can fix a number of tubes together to create a strong base. Folding - Concertinaing paper and card then adding a layer of card above and below it.

			and why? How do they stand up by themselves? How have they been made strong enough of stiff enough for their purpose? What shapes can you see in them that make them strong? How have the structures been made stable? How have the parts been joined together? • Children can use their research to draw a design and annotate the different components of the bridge. • Children can use standard measures to measure and cut materials to fit a structure; this should include cutting strips of wood/ doweling. • Children can suggest what to do next in assembling their products. (Decide who they will work with, Choose where to work, Say what material or component they need, Decide which tool or piece of equipment is needed for a particular task, identify the technique; saw or glue, and decide which finishing media to use). • Children can evaluate their own products by answering questions: How did you make your structure stand up on its own? How did you join the parts together? How can you make it stable? How will you make it strong enough for purpose? What materials will you use and why?	Layering - Corrugated card can be layered to create an extra strong base. (You could add a length of wood to each edge of the card, strengthening the corners with cardboard triangles. You can then add another piece of corrugated card on top of this or repeat this process several times to create an extra strong base). • Create model to meet enquiry outcome. • Evaluate designs based on enquiry outcome. • Suggest modification for future designs.
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Term 3	How do we live a healthy life? (6)	Design ♣ design purposeful, functional, appealing products for themselves and other users based on design criteria ♣ generate, develop, model and communicate their ideas through talking about recipes, create a drawing, - Make ♣ select from and use a range of tools and equipment to perform practical tasks [for cutting, slicing] ♣ select from and use a wide range of ingredients, according to their characteristics use the basic principles of a healthy and varied diet to prepare dishes ♣ understand where food comes from. ♣ evaluate their ideas and products against design criteria	Previous knowledge: EYFS: name common fruit and vegetables or herbs. Y1/2 suggest where food comes from and how it is grown. Science link- the basic human needs. What do we mean by healthy living? Focus engineer/ designer: look at national initiatives for healthy eating. Lushome are designers for encouraging children to eat healthy food. https://www.lushome.com/creative-food-decoration-design-ideas-make-kids-eat-healthy-food/136999 Vocabulary: Healthy, varied, prepare, location, origin, taste, nutrition, food, source, wild/farm, balanced. Knowledge <u>Year 1</u> - Children can name the five food groups from the Eatwell guide: Fruit and vegetables; bread, rice, potatoes, pasta and other starchy food; milk and dairy food; meat, fish, eggs, beans and other non-dairy sources of protein; foods and drinks high in fat and/or sugar. - Children know that everyone should eat at least five portions of fruit and vegetables every day. A portion is what fits into the palm of your hand. - Children know the sensory characteristics of ingredients; taste (flavour), texture (mouth feel), and smell (aroma). - Children know that the food they eat is grown, harvested and prepared; in most cases cooked. - Children select the ingredients they wish to use based on a design criteria. - Children can evaluate the design based on their own likes and dislikes. <u>Year 2</u> - Children can name and sort foods into the five groups from the Eatwell guide. - Children can identify the largest and smallest food groups and discuss what this means for the products children design and make. - Children know that everyone should eat at least five portions of fruit and vegetables every day, and that variety is important and different fruit and vegetables count (fresh, frozen, dries, canned, juice). - Children know that food ingredients can be combined according to their sensory characteristics. - Children can explain the difference between wild and farmed food. - Children select the ingredients they wish to use based on a design criteria. - Children can evaluate their design based on the sensory qualities of the product. Investigate healthy meals using the internet- linked to Eg. Jamie Olivers soup making. Invite Chefs to talk to the children about creating a healthy menu.	<u>Year 1</u> - Children can safely wash food. - Children can use scissors to snip herbs and spring onions. - Children can use skills and techniques to cut and grate fruit or vegetables. (Ingredients for chopping are cut in half lengthways to provide a flat base and held still with a fork so that children can able to cut safely). <u>Year 2</u> - Children can safely use knives and vegetable peelers for chopping, cutting, slicing, peeling. . (Ingredients for slicing are cut in half lengthways to provide a flat base and held still with a fork so that children can able to cut safely). - Children can safely use a grating tools for grating, slicing thin rings and slicing into sticks.
Term 4	What is a home? (6weeks)		ARTIST FOCUS	

Term 5	How do plants grow near me? (6)		Artist focus DT designer link: Andy Bending is a garden designer that has designed a school garden and lives within the Bristol area. https://www.andybendinggardendesign.co.uk/about-andy-bending-garden-design-pl	
Term 6	How will we get around in the future? (4) Previous enquires: Year 1- where is my school? How can we play in different ways? Year 2- What is my hat made of? What did Brunel do for GB? Children will need to have developed an understanding of how to create moving structures. This will be a revisit to Y2 What did Brunel do for GB?	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, and communication technology Make ♣ select from and use a range of tools and equipment to perform practical tasks that involve joining and finishing ♣ select from and use a wide range of materials and components, including construction materials, 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 wheels and axles in their products.	Designer/ Engineer: Historical engineer: Wright brothers. Female car designer http://www.harleyjearl.com/first-women-car-designers Modern English Yacht designer: https://spirityachts.com/spirit-yachts/ Aerospace in Bristol Vocabulary: Design- research, dismantle, purposeful, functional Make: propel, rotate, Evaluate: modify and improve Knowledge Science linked- children will need knowledge and skills from learning about forces and motion teaching. Humanities linked-To know about vehicles from the past and be aware of how transport moves within the chosen environment. Year 1 - Children know that engineers use existing products and current ideas to inform future designs Children should be able to say who the vehicle they design will be for. - Children can follow a design template based on their own experiences. - Children can use information and communication technology to develop and communicate their ideas. - Children know how to use paper/card to build a plane. - Children can evaluate a design based on functional product or aesthetic quality. Year 2 Children should be able to say who the vehicle they design will be for and give a simple explanation for their choice of user. Children can explain how their products work using their knowledge and understanding in science. - Children can use information and communication technology to develop and communicate their ideas. Children can produce a design based on their research. - Children know how to use construction kits, card or recycled materials to build a vehicle to move through water or air - Children know how to construct a paddle wheel or jet propelled boat. - Children can evaluate a design based on functional product and aesthetic quality. Possible trip: The steam museum in Swindon to look at steam trains or a steam boat in Bristol harbour. Visitors: modern day designers- electric scooters/ electric cars. Engineers from Aerospace	Year 1 - Children can use templates in paper and card to create mock-ups. - Children can measure, mark out and cut materials and components to make their vehicle. (Measure the length of dowel with non-standard measures and mark before it is cut). - Children can combine wooden wheels and axles in a toy vehicle. - Children can use scissors, glue, recycled materials, sellotape, straws, elastic bands, foam pieces, balloon to construct an aeroplane or boat structure Year 2 - Children can combine wooden wheels and axles. - Children can measure, mark out, cut and shape a range of materials and components to make their vehicle. (Use a junior hacksaw to cut dowel) - Children can use scissors, glue, recycled materials, sellotape, straws, elastic bands, foam pieces, balloon to construct an aeroplane or boat structure - Children can improve a design based on research and mock-ups. - Children can use finishing techniques (paint or digital images). (This unit could involve a bottle of fizzy drink and bicarbonate of soda making an aeroplane move through the air/ along a long piece of cord).

Barrs Court Primary School Design Technology Knowledge and Skills progression – Red Area Yearly Overview - Year B

	Enquiry	National Curriculum Objectives	Key Knowledge and Vocabulary	Design Technology skills
Term 1	What is my hat made of? (5) Previous learning: EYFS EAD- creating with materials.	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: cutting, shaping, joining and finishing ♣ select from and use a wide range of textiles, 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 improved.	<u>Designer/ Engineer:</u> local milliner NICOLA JAYNE DIDCOTT MILLINERY Bespoke quality hats and fascinators made to your request from Nicola’s Bristol based studio. <u>Vocabulary:</u> Design- research, dismantle, purposeful, functional, appealing. Make: fasten, join, fold, stick , staple, layer, strengthen, stiffen, stable, back-stitch, cross-stitch, running stitch, Evaluate: modify and improve. <u>Knowledge</u> - Linked to science teaching: look at different types of materials and discuss their properties and purpose. - Look at different styles of hat, then investigate the properties in relation to suitability for a hat. - Research types of hat and purpose of a variety of hats; this should include the work of a Milner. Year 1 knowledge Children can generate ideas by drawing in their own experiences of wearing a hat or observing other people wearing a hat. Children with help can generate a design criteria (e.g. the hat should be the right size, strong and comfy to wear). - Children know now how to join materials using different resources such as sticky tape, glue, push pins, staples and paper clips. - Children can use a template to make mock-ups for a hat design. - Children can select from a range of materials and components according to their characteristics, and give scientific reasons for their choices (materials properties). - Children can use scissors to cut out a template and add components to the hat. - Children can use finishing techniques (e.g adding sequins to the hat). Year 2 Knowledge .Children can talk about products they have seen and used as a basis for generating their own design ideas. Children can generate a design criteria (e.g. the hat should be the right size, strong and comfy to wear). - Children know how to join materials using different resources such as sticky tape, glue, and push pins, staples, paper clips, needles and thread. - Children can create templates to represent the shape and size of their products to enable them to assist them with measuring and marking the final product. - Children can independently select materials and components according to the characteristics. They can explain functional properties (i.e. strong or waterproof) or aesthetic qualities (e.g. shiny or patterned). - Children can measure, mark out, cut and shape the materials. - Children can explain their choice of finishing techniques (e.g adding a coloured band to the hat). - Children can create the final design using the chosen material and joining technique.	Year 1. Use previous skills from EYFS- fine motor. - Design a hat for themselves. - Developing techniques for joining paper or card. - Use templates in paper and card to create mock-ups. - Use scissors, glue, paper/ card, sellotape, staples and clips. - Build a hat structure. - Use simple finishing techniques. Year 2. - Design a hat for another child. - Use templates in paper and card to create mock-ups. - Developing techniques for joining paper, card and fabric. - Make a paper template and use it to mark out a piece of fabric. - Use scissors, glue, paper/card, sellotape, pins, staples, clips, needles and thread. - Children can use a basic sewing stitches: running stitch, tack and cross stitch, as appropriate. - Build a hat structure, exploring how they can be made stronger, stiffer and more sturdy It is important that the children try several different techniques before creating a final design.

			Children can explain how their product meets the design criteria (I’m going to use a running stitch to join my hat together because it is stronger than glue or lacing). (This is a vital part of this investigation).	
	How does Barrs Court change - Autumn? (1)		ARTIST FOCUS	
Term 2	Who helps who?(4)		NO ART OR DT	
	What do artists do? (2)		ARTIST FOCUS	
Term 3	How does Barrs Court change? Winter (1)		ARTIST FOCUS	
	Where is Barrs Court Primary School? (5)		NO ART OR DT	
Term 4	What are we? (4		ARTIST FOCUS	
	How does Barrs Court change? Spring (2)		ARTIST FOCUS	
Term 5	How could we play in different ways? (6)		ARTIST FOCUS	

	What grows near me? (3) Previous enquires Year 2: How do plants grow near me? Year 2: How will I get around in the future	Design ♣ design purposeful, functional, appealing products for themselves and other users based on design criteria ♣ generate, develop, model and communicate their ideas through talking about recipes, create a drawing, - Make ♣ select from and use a range of tools and equipment to perform practical tasks [for cutting, slicing] ♣ select from and use a wide range of ingredients, according to their characteristics - use the basic principles of a healthy and varied diet to prepare dishes ♣ understand where food comes from. ♣ evaluate their ideas and products against design criteria	Vocabulary: Healthy, varied, prepare, location, origin, taste, texture, aroma. <u>Year 1.</u> • I know the sensory characteristics of ingredients are appearance, taste (flavour), texture (mouth feel), and smell (aroma) • I can name the five food groups from the Eatwell guide: Fruit and vegetables; bread, rice, potatoes, pasta and other starchy food; milk and dairy food; meat, fish, eggs, beans and other non-dairy sources of protein; foods and drinks high in fat and/or sugar. • I know food is made from plants and meat. • I know that food needs to be prepared and cooked to make it safe to eat. <u>Year 2</u> • I can describe the sensory characteristics of ingredients are appearance, taste (flavour), texture (mouth feel), and smell (aroma) • I can name the five food groups from the Eatwell guide and discuss what foods might be in each group. • I can explain why food needs to be cleaned and cooked for a period of time.	<i>Cookery: I understand where food comes from,</i> <i>Make: I can select from and use a range of tools and equipment to perform tasks.</i> I can use a peeler to prepare carrots or vegetables. I can use a knife safely to cut a vegetable or fruit.
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	How do we move around? (3) (Enquires connected to this: Y2 How will we get around in the future? Y2: How are schools the same?)	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 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 according to their characteristics Evaluate ♣ explore and evaluate a range of existing products ♣ evaluate their ideas and products against design criteria Technical knowledge ♣ explore and use mechanisms ;levers, sliders, wheels and axles in their products	Paper engineer Matthew Reinhart. http://www.matthewreinhart.com/ <u>Science link:</u> animals including humans: how our body moves. <u>Vocabulary:</u> Design- research, dismantle, purposeful, functional, appealing. Make: fold, lever, pivot, hinge, slide, spinner, pop-up, model, rotate, cutting, shaping, joining, finishing. Evaluate: analyse improve <u>Knowledge</u> Outcome: Movement can be created in different ways using different mechanisms. Children can talk about the design process; research, create a design linked to enquiry outcome, investigate the use of materials for a purpose and discuss how a design mechanism could be incorporated into their own design. <u>Year 1 Knowledge</u> Children can draw on everyday experiences of things that can move. Children can talk about how animals and people move their bodies (Application of science knowledge) Children can explain how they manipulate a moving part to create an effect (a bird flying across the sky, an animal popping up or the rotation of a picture wheel). Children know that simple mechanisms produce different types of movement; sliders move in a straight line (left/right, up/down), levers move in a curve, and wheels and axles which turn. Children can generate a design based on their own ideas and design criteria (They make the book/card for themselves). Children can use a template to record and label their design. Children can apply their knowledge when deciding which type of mechanism they need to create a push or pull movement in their book/card. Children can use pencils or paint to bring pictures to illustrate the book/card. Children can evaluate the product based on the Class teachers design criteria. <u>Year2 Knowledge</u> Children can draw on previous experiences of things that can move. Children can talk about how animals and people use a hinge and lever to move their bodies (Application of science knowledge) Children know how to disassemble a moving part books to investigate a design feature. They can identify the position of levers, wheels and sliders to create desired movement. Children can explain how simple mechanisms (sliders, levers, wheels and axles), produce different types of movement, they can talk about how winding mechanisms create a movement. Children can use simple drawings to support their designing with inclusion of labels to identify materials, components and parts of their product. Children can use a design criteria to produce a book for a reception or year 1 child. Children can apply their knowledge when deciding which type of mechanism they need to create the movement they want in their product. Children can use paper finishing techniques to bring pictures to life in a book/card. Children can evaluate the product based on the younger child’s design criteria. Visitors: younger children, book printers, authors, illustrators, toy makers, local craft experts.	• Use card strips, paper of different thickness, scissors, glue, blue tac, split pins, coloured pens, pencils, magazines, printed images. • Developing techniques for connecting different parts and adding illustrations • Create a pop-up book to meet the enquiry outcome. Evaluate designs by talking to the children that they have chosen to share their books with as part of the enquiry. <u>Year 1 skills</u> • Use construction materials to create moving parts. • Cut out pictures to create illustrations. • Know how to fold card. • Know how to join materials to make a slider. <u>Year 2 skills</u> • Know how to measure the required length of paper/ card before cutting out. • Know how to join paper/card. • Know how to construct a slider to move a picture left/ right, up/down. • Know how to use wheels and axles to rotate a picture. • Know how parts that move can be made stronger, stiffer and more stable.
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Term 6	What might I do in the future? (2) Previous enquires: Year 2: How will we get around in the future? Year 2: What could my classroom be made of?	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 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 according to their characteristics Evaluate ♣ explore and evaluate a range of existing products ♣ evaluate their ideas and products against design criteria	Vocabulary: cutting, shaping, joining, finishing, representing. <u>Year 1 Knowledge</u> - Children can explore ‘flip books’ and talk about what they can see in the design. - Children can talk about different types of fixing from previous enquiry. - Children can use their knowledge to select a joining technique. - Children can use a design template to construct their ‘flip book’. <u>Year 2 Knowledge</u> - Children can explore different flip flip books and explain how they think they are made, and what makes them work. - Children can explain different types of fixing from previous enquiry. - Children can use their knowledge to select an appropriate joining technique. - Children can cut out and construct a ‘flip book’.	<u>Year 1 skills</u> - I can use scissors to cut out a picture. - I can use tape, glue or a split pin to attach papers or card components. - I can use staples to join paper/card to make a ‘flipping face’ book. <u>Year 2 skills</u> - I can use scissors or a craft knife to cut out a picture. - I can use a split pin to attach papers or card components. - I can use staples or a hole punch and tag to join paper/card to make a ‘flipping face’ book.
	How does my school change-summer? (2)		ARTIST FOCUS	

Barrs Court Primary School Design Technology Knowledge and Skills progression – Blue Area Yearly Overview - Year A

	Enquiry	National Curriculum Objectives	Key Knowledge and vocabulary	Design Technology skills
Term 1	Why do we live here? (6)		ARTIST FOCUS	
Term 2	What is sound?(6) Enquiries connected to this Year 2: What could my classroom be made of? (SCI/ENG) Year 3: How can you feel the force? (SCI) Year 4: What should you flush down the loo? (SCI) Year 5: How can science help the homeless? (SCI) Year 5: How are you going to save the planet?(SCI/ENG) Year 6: How big is your footprint?	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 joining and finishing], accurately ♣ select from and use a wider range of materials and components, 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	Designer/ Engineer: History. Thermal Earmuffs were invented by Chester Greenwood of Farmington, Maine in 1873, at the age of 15. Who invented hearing protection? Ray and Cecilia Benner invented the first moldable pure silicone ear plug in 1962. These earplugs were valued by swimmers because of their waterproof qualities, as well as those trying to avoid harmful noise. Ray Benner, who was a Classical musician, bought McKeon Products in 1962. Vocabulary: Design- purposeful, functional, decision Make: combine, stable, score, shell structure, marking out, tabs, adhesive, assemble, corrugated. Evaluate: investigate, evaluate criteria, improve Knowledge Year 3 - Children know who designed and made the product. - Children can talk about inventors, designers and engineers that have developed ground-breaking products. -Children can evaluate commercially produced products. -Children can use learning from science to help design and make products that work. -Children can analyse the effectiveness of ear defenders by carrying out a scientific investigation. -children can evaluate the effectiveness of a product based on their own criteria. Year 4 - Children can use their knowledge of previous research to explain who made the products, where the product was made and the purpose for the previous design. - Children can evaluate commercially produced products and use their findings to inform their own design criteria. -children can consider the views of others to evaluate their product (ear defenders)	Children can evaluate a product based on consumer needs. Skills for making ear defenders: Year 3 -Select cutting tools and components to join materials to make ear defenders. -select materials that are suitable to make ear defenders. - use knowledge of a shell structure to make the product strong. Year 4 -explain the choice of tools and equipment in relation to the skills and techniques they will be using. -use research findings to inform the choice of materials to make ear defenders. - use understanding of the properties of materials to make ear defenders that reduce the amount of noise heard.
	What is creativity? (3)	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	<u>This enquiry should build on the evaluation skills from the previous enquiry.</u> Knowledge Year 3 - Children know who designed and made the product. - Children can talk about inventors, designers and engineers that have developed ground-breaking products. -Children can evaluate commercially produced products. -Children can use learning from science to help design and make products that work. -Children can analyse the effectiveness of a product using a set criteria. -children can evaluate the effectiveness of a product based on their own criteria. Year 4 - Children can use their knowledge of previous research to explain who made the products, where the product was made and the purpose for the previous design. - Children can evaluate commercially produced products and use their findings to inform their own design criteria. -children can consider the views of others to evaluate their product.	-explain the choice of tools and equipment in relation to the skills and techniques they will be using. -use research findings to inform the choice of materials to be used in their design. -improve skills used previously by reviewing the personal creativity and skills.

Term 3	How can we switch off? (6)	<u>Design</u> ♣ use research to inform the design of a appealing product that is fit for purpose, aimed at particular individuals or groups ♣ generate, develop and communicate their ideas through discussion and computer-aided design <u>Make</u> ♣ select from and use equipment to perform practical tasks ♣ select from and use a range of materials based on aesthetic qualities <u>Evaluate</u> ♣ evaluate their ideas and products against their own design criteria and consider the views of others to improve their work <u>Technical knowledge</u> ♣ 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	<u>Designer/ Engineer</u> James Dehlsen Pioneer in wind power and renewable energy innovation in the U.S. <u>Vocabulary:</u> Design- research, purpose, product Make: aesthetic quality, appealing for an audience, purpose, series circuit, fault, connection, toggle switch, push to make switch, push to break switch, battery, insulator, conductor, system, input device, and output device. Evaluate: views and opinions <u>Knowledge</u> Science link- understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]. Science link-They can apply their electrical circuit skills to design and make a product for a given audience. Learners can explain how electrical systems are used to monitor and control their product. -Children can gather information about the needs and wants of an individual or group. -Children can explain the purpose of the product.	-to use research knowledge -to select materials related to printing skills; pencils, paints, prints. -to use computer-aided design.
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Term 4	Why are more people becoming vegetarian? (6)	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 Food 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. Evaluate ♣ evaluate their ideas and products against their own design criteria and consider the views of others to improve their work	<u>Designer/ Engineer:</u> Michael Caine is a black Michelin star chef. Use the eat them to defeat them campaign to support the design process. The outcomes of this enquiry need to be evaluated with reference to science. <u>Vocabulary:</u> Design- healthy, savoury, seasonality reared, processed. Make: Raw, cooked Preparation, processed balanced, texture, smell, taste, sweet, sour, hot, spicy, appearance, processed, seasonal, harvested, healthy, varied, diet. Evaluate: create, modify, improve, presence <u>Knowledge</u> <u>Year 3</u> - Children should gather information about the needs and wants of individuals and groups. - Children can carry out a class based survey. - Children can talk about food sources and relate to animal products. - Children can explain the Eatwell guide. - Evaluate their design for a healthy/balanced meal by commenting on how healthy, environmentally friendly, and nutritious they are. - Children can evaluate and present their findings. <u>Year 4</u> - Children should be able to describe, in some detail, the purpose of the products they are designing and making. (Designing and making a healthy, seasonal soup recipe that the school cook could make for lunch). - Children to know how to carry out a survey. - Children to understand that a balanced meal needs to contain vegetables, whole grains, fruits and healthy protein. - Children know facts about where and how a variety of ingredients are grown, reared, caught and processed (food production). - Evaluate their design for a healthy/balanced meal by commenting on how healthy, environmentally friendly, nutritious etc. they are - Children can present their research using art and engineering skills. -	<u>Year 3</u> Children should demonstrate some accuracy when they are measuring out ingredients. Prepare ingredients hygienically using appropriate utensils. Children should be able to follow a recipe. Children should be able to use skills such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. <u>Year 4</u> Children should be able to explain how specific aspects of the design meets ‘users’ needs. Children should demonstrate accuracy when they are measuring out ingredients to the nearest gram. Children should assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking). Children should be able to select skills such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking to assemble a product. .
	Where does our water come from? (4)		ARTIST FOCUS	
Term 5	What should you flush down the loo? (4)	Design ♣ use research to inform the design of a appealing product that is fit for purpose, aimed at particular individuals or groups ♣ generate, develop and communicate their ideas through discussion and computer-aided design Make ♣ select from and use equipment to perform practical tasks ♣ select from and use a range of materials based on aesthetic qualities Evaluate ♣ evaluate their ideas and products against their own design criteria and consider the views of others to improve their work	<u>Designer:</u> Look at local graphic designers. This way up! This Way Up is an independent, award winning creative agency with a mission to improve lives by working with health and natural food and drink brands. https://www.thiswayupdesign.com/ <u>Vocabulary:</u> Design- research, purpose, product Make: aesthetic quality, appealing for an audience, purpose Evaluate: views and opinions <u>Knowledge</u> Use scientific knowledge. -Children know how to make a poster that will appeal to an audience. -Children can select resources and materials to create aesthetic qualities in the final design. -children can explain how they have included a design brief in their product.	-to use research knowledge -to select materials related to printing skills; pencils, paints, prints. to use computer-aided design. -to describe in detail, the purpose of the product they have designed and made. This should focus on enhancing previous work from T3.
	Who stood here before us? (5)		ARTIST FOCUS	
Term 6				

Barrs Court Primary School Design Technology Knowledge and Skills progression – Blue Area Yearly Overview - Year B

	Enquiry	National Curriculum Objectives	Key Knowledge and vocabulary	Design Technology skills
Term 1	Where does the darkness come from? (6)	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 textiles, 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	Designer/ Engineer: Thomas Edison Pelham puppets- Historical link to Marlborough. <u>Vocabulary:</u> Design- Design brief, Annotated diagram, design process, storyboard, Make: lever, linkages, hinge, cutting, joining, linear (in a straight line), reciprocating (backwards and forwards in t straight line- slider) Evaluate: analyse, improve. <u>Knowledge</u> <u>Year 3</u> -Children can use their knowledge of shadow puppets to inform their design. (Look at different types of shadow puppet to develop a design criteria and inform a design for a functional product). -Children can describe the purpose of the product they are designing and making. -Children can use their KS1 knowledge to explain simple joining techniques, mechanisms and strengthen techniques; <i>(KS1 skills: Moving picture: Children know how to join materials using different resources such as sticky tape, glue, and push pins, staples, paper clips, needles and thread.</i> Children can explain how simple mechanisms (sliders, levers, wheels and axles), produce different types of movement, they can talk about how winding mechanisms create a movement) -Children are able to explain how the different parts of the puppet work (When you push or pull the slider it causes the lever to move and this makes the puppets arms/ legs move) <u>Year 4</u> -Children can use their previous knowledge to explain the purpose of the products they are designing and making, and this is reflected in the design criteria they generate at the beginning of the project. -Children can use their KS1 and KS2 knowledge to explain simple techniques. -Children know how mechanical systems such as levers and linkages create movement. -Children are able to explain why they have used particular materials and how this impacts on how the different parts of the puppet work.	<u>Year 3</u> -children should be able to use the correct technical vocabulary to describe the movement of mechanical systems. - Children should demonstrate some accuracy when they are measuring, marking out, cutting, shaping, assembling and joining their puppet. - Children should cut materials accurately and safely by selecting appropriate tools (scissors) -Children should be able to use cardboard and split pin linkages to create ‘joints’ of a body or levers to make an object move without directly touching. -Children should be able to evaluate the product based on the design criteria. <u>Year 4</u> -Children should be able to use the correct technical vocabulary to describe the movement of mechanical systems - Children should demonstrate accuracy when they are measuring (to the nearest cm), marking out, cutting, shaping, assembling and joining their puppet. - Children should cut materials accurately and safely by selecting appropriate tools (scissors, craft knife) -Children can use their knowledge of linkages and levers to produce a shadow puppet that has at least 2 moving parts. -Children should evaluate their product based on the accuracy of production and product criteria.
Term 2	How can we find out about people in the past? (7)	♣ understand how key events and individuals in design and technology have helped shape the world	As a historical link revisit the designers that were part of the enquiries in KS1 Ole Kirk Christiansen. Lego designer 1949 Denmark Isambard Kingdom Brunel. Leonardo da Vinci Wright brothers.	
Term 3	What is underneath our feet? (6)		NOT ART OR DT	

Term 4	What is the difference between surviving and being health? (6)	♣ 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.	<u>Designer/ Engineer:</u> Contact a local dietician. <u>Vocabulary:</u> Design- Design brief create Make: Healthy, nutrition, diet, exercise, varied, prepare, location, origin, Raw, cooked Preparation, processed balanced, texture, smell, taste, sweet, sour, hot, spicy, appearance, processed, seasonal, harvested, diet. Evaluate:, modify, improve <u>Knowledge</u> <u>Year 3</u> Children know there are 5 food groups in the Eatwell guide. Children know that foods are sometimes made from two or more of these food groups. Children can name and describe a variety of fruit and vegetables. Children can talk about food that they eat. Children can use their science knowledge to answer the question; What do we need to grow and be healthy? <u>Year 4</u> Children can name the 5 food groups in the Eatwell guide. Children can give examples of how foods are sometimes made from two or more of the Eatwell guide food groups. Children can talk about food that they eat and other community users. Children can explain the difference between basic nutrition and being healthy	<u>Year 3</u> To be able to use their knowledge of the Eatwell Guide to discuss what could be included in a healthy recipe. To investigate combination of ingredients for an audience to try To evaluate the success of the product <u>Year 4</u> To be able to explain choices in a recipe using their knowledge of the Eatwell guide. To evaluate the success of the product and explain why they think it was a success. To evaluate the success of the product and make modification (e.g. How could they make them even healthier? Replacing fats or less sugar?) If the children cook food they should cover the following: - Prepare ingredients hygienically using appropriate utensils. - Measure ingredients to the nearest gram accurately. - Assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking). - Follow a recipe, which might have been improved or modified.
Term 5	How do plants die? (5) How can you feel the force? (4)	<u>Design</u> ♣ use research and develop design criteria to inform the design of innovative, functional,	ARTISTIC FOCUS <u>Designer/ Engineer:</u> E.J. Lawrence was the one responsible for the creation of the table football. He patented it in 1913.	- Children should be able to create an engineering board to demonstrate the progression in skills. <u>Year 3</u>

Term 6	<u>Previous enquiries</u> Year 1- What is my hat made of? What could my classroom be made of?	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 <u>Make</u> ♣ 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, according to their functional properties and aesthetic qualities <u>Evaluate</u> ♣ 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 <u>Technical knowledge</u> ♣ apply their understanding of how to strengthen, stiffen and reinforce more complex structures	The Galician inventor Alejandro Finisterre patented his invention of table football, fútbolín, in Madrid during the Spanish Civil War in 1937. His version of the game is the one used in modern-day table football. Vocabulary: Design- research, purpose, product Make: aesthetic quality, appealing for an audience, purpose Evaluate: design brief. views and opinions. <u>Knowledge</u> <u>Year 3</u> Children should be able to use their research and knowledge to identify the intended users (this should be moving away from the KS1 focus of themselves). Children should use their knowledge of material properties to describe the purpose of the product they are designing and making. This should be beyond the statements they make in KS1. Children should indicate the design features of their product that will appeal to the intended user. This should take into consideration the use of recycled materials and availability of resources. <u>Year 4</u> Children should be able to use previous knowledge to talk about designers from KS1 and KS2 enquiries. Children should be able to explain the purpose of the product and start to consider this in the design process based on their scientific understanding. Children should be able to identify the intended users’ needs and preferences. Children should consider the availability of resources and time, and their own level of practical expertise. .Children should be able to explain how parts of their product works using their scientific knowledge and understanding.	Children should be able to talk about designers from KS1 enquiries. Children should build on the simple design criteria from KS1 by developing their own design criteria, and taking into consideration the available resources. Children should be able to select tools and equipment for the task. Children should be able to make the final design, complete with: - Labelled diagram showing design features. Children should be able to explain the particular parts of the product. Children should be able to evaluate the effectiveness of the game and identify the key features. <u>Year 4</u> Children should formulate a design criteria themselves. (e.g. The magnetic game should be entertaining to look at, easy to use, make use of magnets and recycled materials, and work reliably) Children should be able to select tools and equipment for the task. Children should be able to make the final design, complete with: Labelled diagram showing design. Children should be able to evaluate their ideas against the design criteria and make informed decisions about how to improve the product.
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	Why did people travel in the past? (5)	<u>Design</u> ♣ 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. <u>Make</u> ♣ 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 textiles according to their functional properties and aesthetic qualities <u>Evaluate</u> ♣ investigate and analyse a range of existing products individuals in design and technology have helped shape the world <u>Technical knowledge</u> ♣ apply their understanding of how to strengthen, stiffen and reinforce more complex structures	<u>Designer/ Engineer:</u> Samuel Parkinson Stephanie Kwolek was an American-Polish chemist who worked with synthetic (humanly-constructed) fibres. She invented Kevlar, an incredibly light but very strong material. <u>Vocabulary:</u> Design- Design brief, design process, functional, specification, aesthetic Make: running stitch, tacking stitch, weaving, structure, fabric, fastening, compartment, finishing technique, strengthen, weakness, stiffening, template, stitch, and seam. Evaluate: analyse. <u>Knowledge</u> This enquiry will be the first opportunity to use textiles within year 3/4 so should build on the work completed in KS1- Milliner making hats. <u>Year 3</u> Children can gather information about the wants and needs of the explorer. Children can indicate the design features of their product that will appeal to the intended users. Children can explain their choice of material according to functional properties. Children know how to strengthen, stiffen and reinforce existing fabrics. Children can evaluate the design based on the design criteria. <u>Year 4</u> Children can use their research to describe in some detail, the purpose of the pendant and class tableau. Children can explain how specific aspects of the design will meet the users' needs, wants and preferences. Children can explain their choice of material according to functional properties and aesthetic qualities. Children understand how to securely join two pieces of fabric together. Children know how to strengthen, stiffen and reinforce existing fabrics. Children can evaluate the design linked to historical criteria and choice of joining technique.	<u>Year 3</u> Children should use annotated sketches (labels) to explain the features of the pendant. Children should be able to follow instructions to join a pattern, made from tracing paper onto fabric. Children will be able to select fabrics based on their experience of materials in KS1. Children should demonstrate some accuracy when they are measuring, marking out, cutting, shaping, assembling and joining - Children should cut materials accurately and safely by selecting appropriate tools (scissors) Children can use a needle and thread to complete basic sewing stitches: tac and running stitch as appropriate to make a pennant <u>Year 4</u> Children should use annotated sketches (notes) to explain the features of the pendant. Children should be able to join a pattern, made from tracing paper onto fabric. Children will be able to select 'suitable' materials to match the skills and techniques they will be using (I chose some cotton material as it is strong and hard wearing) Children should demonstrate accuracy when they are measuring (to the nearest cm), marking out, cutting, shaping, assembling and joining the material. - Children should cut materials accurately and safely by selecting appropriate tools (textile tools) Children can use appropriate tools to complete basic sewing stitches: front stitch, running stitch and cross stitch, as appropriate to make a pennant.
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Barrs Court Primary School Design Technology Knowledge and Skills progression – Green Area Yearly Overview - Year A

	Enquiry	National Curriculum Objectives	Key Knowledge and vocabulary	Design Technology skills
Term 1	How are lives saved? (7)		NOT DT OR ART	
Term 2	How do we all live together? (7)		NOT DT OR ART	
Term 3	Where does our food really come from? (6)	<u>Design</u> ♣ 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 <u>Make</u> ♣ select from and use a wider range of ingredients, according to their functional properties and aesthetic qualities <u>Evaluate</u> ♣ 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. <u>Food</u> ♣ 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.	<u>Previous enquires that will inform Y5/6 planning:</u> Y3/4 Why are more people becoming vegetarian? <u>Designer/ Engineer:</u> select local food engineers e.g. Engineering Design graduate from Bristol university Charlie Guy founds Lett Us Grow with fellow students Ben Crowther and Jack Farmer to produce low carbon food. <u>Vocabulary:</u> Design- , survey, design proposal, design specification, functional, appealing, aesthetic Make: fat, sugar ,carbohydrate ,protein, vitamins, nutrients, varied, gluten, daily, allergy, intolerance, savoury, source, processed, reared, seasonality, combine, fold, blend, whisk, beat, roll, shape, crumble. Evaluate: product analysis <u>Knowledge</u> Children can explain the origin and journey of food products. Children can give reasons why food might be sourced locally or from another country. Children can explain the importance of healthy food choices. Children are able to talk about seasonality and and how food is processed. Children should be to use extensive research to inform the design decisions. Children should be able to explain how specific aspects of their design ideas or products will meet users’ needs, wants and preferences. Children should be able to distinguish between the physical or functional properties of materials that enable products to work effectively and the aesthetic qualities of materials that give products their appearance, texture, taste and aroma.	Children can research where food is grown in the UK. Children can use previous knowledge and skills for safe food preparation Children understand the importance of correct storage and handling of ingredients (using knowledge of micro-organisms). Children measure accurately and calculate ratios of ingredients to scale up or down from a recipe. Children can demonstrate a range of baking and cooking techniques. Children can create and refine recipes, including ingredients, methods, cooking times and temperatures. Children can use relevant technical and sensory vocabulary to evaluate their product.
Term 4	Linnaeus and Darwin: What connects them? (6)		ARTIST FOCUS	
Term 5	Why are shadows important? (4)		ARTIST FOCUS	
		<u>Design</u>		

Term 6	Who were the greatest engineers? The Victorians or Ancient Britons. (5)	♣ 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 <u>Make</u> ♣ 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 <u>Evaluate</u> ♣ 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 <u>Technical knowledge</u> ♣ 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	<u>Designer/ Engineer:</u> (REVIEW designers and engineers that have been part of previous research in KS1 and LKS2) Focus on local engineers that have been influenced by engineers in history. The suspension bridge and Bristol docks should be a key factor in this enquiry. Previous enquires KS1 focus engineers: Ole Kirk Christiansen. Lego designer 1949 Denmark. He chose materials that were suitable for building plastic models. Isambard Kingdom Brunel. <u>KS1 enquiry that will inform planning for this enquiry.</u> <u>What did Brunel do for Great Britain?</u> Leonardo da Vinci for his bridge design. Wright brothers. Alexander Graham Bell Previous enquires KS2 What do forces actually do? <u>Vocabulary:</u> Design- architecture, invention, innovative, functional, appealing, annotated sketch, specification, Make: components, raw materials, construction, electrical system, mechanical system, exert, pressure, pulley, levers, drive belt, spindle, rotation, ratio, input process (LDRs), output process, pneumatic systems, prototype, reinforce, triangulation, stability, temporary, permanent, Evaluate: Linear, reciprocating, rotary, <u>Knowledge</u> Children know the names of famous inventors that have been part of enquiries in KS1 and KS2 and can explain how their work has impacted on modern designs and inventions. (Thomas Edison Wright brothers, I.K.Brunel – what did he do? How did he design? What did he use? How did he achieve his outcomes?) Children can identify and explain the greatest engineers or achievements. Children can use their Stone Age to Iron Age research to explain inventions involving weapons, jewellery and household items. Children can apply skills for strengthening, stiffening & reinforcing more complex structures and explain why they have made these choices within the design. Children can incorporate gears, pulleys, cams, levers and linkages into their design. Children can apply understanding of computing to program, monitor and control their products. <u>Year 5</u> Children can explain how engineers have made a difference to the world we live in. Children can communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagram. Children know how mechanical systems such as cams and pulleys or gears create movement. Children should be able to explain why the mechanical components are suitable for the product they are designing and making according to the type of movement they produce. Children can use trial and error to improve design – go through 3 rotations of the design to decide final product. <u>Year 6</u> Children understand how key events and individuals in design and technology have helped shape the world. Children know how to program a computer to monitor changes in the environment and control their products. They can explain the ‘input’ and ‘output’. Children can build prototypes and parts pattern pieces, testing and redesigning. Children can use test results to make predictions to set up further comparative and fair tests	Children can investigate and analyse a range of existing products Children can apply their understanding of how to strengthen, stiffen and reinforce more complex structures. Children can 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 Children can apply previously taught skills for designing, making and evaluating products. Children can formulate a step by step plan to guide making, listing tools, equipment, materials and components Children can competently select from and use appropriate tools to accurately measure, mark, cut and assemble materials, and securely connect electrical components to provide reliable functional products. Children can confidently demonstrating cutting, shaping, joining and finishing skills using wood. Children can present their design to a critical audience.
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	How big is your footprint: ecological/digital/carbon?(4)		ARTSIS FOCUS	
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Barrs Court Primary School Design Technology Knowledge and Skills progression – Green Area Yearly Overview - Year B

	Enquiry	National Curriculum Objectives	Key Knowledge and vocabulary	Design Technology skills
Term 1	What does the earth look like from the Solar System? (6)		ART FOCUS	
Term 2	How can we show what we believe in? (7)		ART FOCUS	
Term 3	How can science help the vulnerable? (6)	<u>Design</u> ♣ 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 <u>Make</u> ♣ 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 <u>Evaluate</u> ♣ 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 <u>Technical knowledge</u> ♣ 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	Previous enquires in KS1: Cycle A What could my classroom be made of? Cycle B: What is my hat made of? Previous enquires in LKS2 Cycle A What is sound? Cycle B Why did people travel in the past? This enquiry requires the children to draw on all elements of DT that have been previously taught. Teachers should therefore ensure that ample opportunity is given to discussing the skills and knowledge that the children have and these should then be applied to the enquiry. This is a STEM enquiry and should be presented to the children with a clear focus on the connections made between science and engineering. <u>Designer/ Engineer:</u> Belgian chemist and clever marketer Leo Baekeland pioneered the first fully synthetic plastic in 1907. Leo H. Baekeland introduced the world to "bakelite," the first completely synthetic resin, which could be moulded and used in hundreds of different ways. Roy J. Plunkett (June 26, 1910 – May 12, 1994) was an American chemist. He invented polytetrafluoroethylene (PTFE), i.e. Teflon, in 1938. This enquiry should include a visitor linked to the product of study. This could be a homeless person or a charity linked to the provision of resources for homeless people. Children should look at inventions that are linked to their age. This can be through the use of TED talk for kids on the internet https://visme.co/blog/ted-talks-kids/ <u>Vocabulary:</u> Design- Innovative, Cross-section, survey, design proposal, ergonomics, prototype, Make: Membrane switch, pressure pad, reed switch, resistor, rivet, shaft, side switch, terminal block, clamp, hydraulics, linkage, set square, Evaluate: aesthetics, product analysis <u>Knowledge</u> Children can use their knowledge of a design process to create a validated survival pack. <u>Year 5</u> Children know how to research the work of designers/ engineers such as; Charles Macintosh, Ruth Benerito. Children can use their previous knowledge to discuss how even small inventions can impact on the lives of people for generations. They can explain why they have been invented? What problems the inventors may have had and how they were solved?	<u>Designing Year 5</u> Children work confidently within a range of contexts, such as, culture, industry and the wider environment. Children can use surveys, interviews, questionnaires and web based resources to develop, designs for functional products. Children can use research to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups and take account of some constraints (time, resources or costs) Evaluate Children can record data and results with increasing complexity to inform the intended outcome. Children can describe the purpose of their product; appeal to intended users; and how particular parts of the product work. Children can use cross-sectional and exploded diagrams within the design presentation. <u>Designing Year 6</u> Children can select research techniques such as surveys, interviews, questionnaires and web based resources to develop designs for functional products. Children can use their research to identify the needs, wants, preferences and values of particular individuals and groups. Children can use cross-sectional and exploded diagrams to explain their choice of materials and design criteria within their presentation. Evaluate Children can record data and results with increasing complexity ending with a ranked ‘product evaluation and review’ for a chosen charity. Children can use research to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups and take account of some constraints including time, resources and costs

		♣ 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.	Children draw on previous engineering skills to consider everyday products and develop an assessment criteria for the suitability of each material for different purposes (wet/dry/day/night). Children can draw on research to generate realistic ideas. Children can make design decisions that take account of the availability of resources. <u>Year 6</u> Children can use their knowledge to discuss the work of scientists in the field of materials that have come up with innovative product ideas. Children can use previous knowledge to question engineers about their designs based on their understanding of the 3 parts of a design process. Children know how to use their engineering skills to consider everyday products and establish a ranking based on the suitability of each material for different locations (wet/dry/day/night). Children can draw on research to generate innovative ideas. Children can make design decisions, taking account of constraints such as time, resources and cost.	
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Term 4	Who is trading with whom? (6)	<u>Design</u> ♣ 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, prototypes, pattern pieces and computer-aided design <u>Make</u> ♣ 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, according to their functional properties and aesthetic qualities <u>Evaluate</u> ♣ 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	Previous enquires in LKS2. <u>What is creativity?</u> How can we switch off? How can you feel the force? Why did people travel in the past? <u>Designer/ Engineer:</u> Research Royal Mint designers that have influenced the coins we have in circulation. <u>Vocabulary:</u> Design- Innovative, survey, design proposal, Make: structure, strengthen, stability, shape, join. Evaluate: function, innovative, research, functional <u>Knowledge</u> Children know how to review and evaluate a number of coins based on how they are made or the historical reason for their production. Children can set their own criteria within their classroom; this may be different to another class but this will allow children to complete a critical analysis of products. The evaluation should focus on the materials used to make the coin, the construction of the coin, and the reason for production. Children can use historical research to inform their design. Children should be able to use skills for ‘making’ that has not previously been used within their year group (this may be a focus on precision of measurement, cutting skills, joining, or may include elements of all). Children know how to create coins based on history of trading in local area and beyond. Children know how to work within a design team to design, make and present their currency to the client. They are able to evaluate their product and suggest future design modifications. Children should be able to explain the importance of the currency from a historical perspective, i.e. why coins were important to the local area at that time and why trade was important. Children should be able to explain the design process from design brief to final product. They should be able to explain how they resolved issues and make suggestions for future designs.	<u>Designing Year 5</u> Children design purposeful, functional, appealing products for themselves and other users based on design criteria. Children generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and where appropriate, information and communication technology. <u>Evaluate</u> Children investigate and analyse a range of products. Children evaluate their ideas and products against their own criteria and consider the views of others to improve their work. Children explain their currency that they have developed and why and what they are planning on using it. <u>Make -Cookery</u> Children prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques <u>Designing Year 6</u> Children use previous research techniques (surveys, interviews, questionnaires and discussion), to develop design criteria that will inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups Children generate, develop, model and communicate their ideas through discussion, annotated sketches, prototypes, pattern pieces and computer-aided design <u>Evaluate</u> As year 5 with the following addition; Children understand and explain how key events and individuals in design and technology have helped shape the world <u>Make -Cookery</u> Children prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques and knowledge of seasonality and availability. Children explain their currency that they have developed and why and what they are planning on using it.
Term 5	How are you helping to save our planet? (5)	<u>Design</u> ♣ 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 <u>Make</u> ♣ 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 according to their functional properties and aesthetic qualities <u>Evaluate</u>	Previous enquires in LKS2: Cycle A How can we switch off? Cycle A What should you flush down the loo? <u>Designer/ Engineer:</u> use local civil engineers. Engineers and designers should be chosen to reflect the choice of enquiry- this will depend on the focus of the enquiry. <u>Vocabulary:</u> Design- design specification, design brief, design purpose, prototype, and annotated sketches. Make: frame, structure, reinforce, stability, shape, join Evaluate: functional, innovative, relevant <u>Knowledge</u> The learners have a choice of enquiry, so the knowledge and skills will be based around the chosen enquiry but should develop learner’s knowledge of the whole design process. To achieve this the children need to develop their research skills through enquiry 1 and then apply through enquiry 2. Enquiry 1- This enquiry will focus on evaluating products and making suggestions for a design, rather than spending time on evaluating and improving a design. Selected products should be the focus for the children to apply their knowledge of previously taught skills.	Children should generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and use computer-aided design if a garden design is the chosen enquiry. Children can explore products that we use every day and evaluate them on an environmental ranking. As part of the design-(To master construction skills) the children need to develop skills for using wood or computer aided design and production. Children should develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filing and sanding). Children should be able to select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. Children should be able to use measuring tools to accurate mark, cut and assemble the product. Children should follow a design brief and regularly evaluate and amend the process to meet changing circumstances that may occur when using the school environment. Children should be able to discuss how engineers are able 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 <u>Technical knowledge</u> ♣ apply their understanding of how to strengthen, stiffen and reinforce more complex structures ♣ apply their understanding of computing to program, monitor and control their products	Children should learn about the work of local eco-campaigner this should include the school Eco-team; the work of local environmental and conservation charities. Children should watch episodes of Dragon’s Den or similar to consider how other small ideas have been successful, such as bamboo-based products, high speed composters, alternatives to liquid soap, phone chargers that switch off when not in use. Enquiry 2 This enquiry will involve the learner being able to evaluate the school environment and use this information to inform the development of a design and ability to produce the product. It should be a large scale project involving all children and cover all aspects of the design process.	provide solutions to a wide range of problems as well as new-to-the-world ideas. They need to know that ideas for existing problems need to be implemented sooner rather than later.

Term 6	What do forces actually do?(4)	<u>Design</u> ♣ 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 <u>Make</u> ♣ 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 <u>Evaluate</u> ♣ 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 <u>Technical knowledge</u> ♣ 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	<u>Children MUST KNOW AND USE PREVIOUS ENQUIRIES from KS1</u> How will we get around in the future? How do we move around? <u>from LKS2</u> How can you feel the force? TO INFORM THE EVALUATION OF PRODUCTS IN THIS ENQUIRY. <u>Designer/ Engineer:</u> Structural engineers. Fazlur Rahman Khan was a Bangladeshi-American structural engineer and architect who initiated important structural systems for skyscrapers. He is often considered as the greatest structural engineer in 20th century and the "father of tubular designs for high-rises. <u>Vocabulary:</u> Design- design specification, design brief, design purpose, prototype, and annotated sketches. Make: gears, pulleys, cams, levers and linkages, fulcrum Electrical systems vocabulary.-reed, switch, toggle switch, push to make switch, push to break switch, light dependent resistor (LDR), tilt switch, light emitting diode (LED), USB cable, insulator, conductor, control program, series circuit, parallel circuit. Mechanical/mechanisms systems vocabulary Pulley, drive belt, gear, rotation, spindle, drive follower, ratios transmission, mechanical system, electrical system, input process, output process. Evaluate: function, innovative, research, functional <u>Knowledge</u> Whilst visiting a local dock/building site/industrial plant or recorded images look at cranes/heavy lifting equipment and explain how the mechanical systems are used (gears, pulleys, cams, levers and linkages] . Look at illustrations of Rube Goldberg’s machines and try to use previous designer knowledge to explain what they do and how they work, before reading the explanations. Children need to use their science knowledge as an engineering team to design a crazy contraption that demonstrates knowledge of different mechanisms (levers, pulleys, gears). The final design should be an annotated sketch or diagram (as large scale/detailed as possible), complete with a clear explanation. (Year 6 children should be able to demonstrate their engineering knowledge and skills to present their design to a critical audience). Children use previous knowledge, annotated sketches, cross-sectional and exploded diagrams to explain a design for a machine. Children know how to make paper planes and/or boats to investigate the effect of streamlining on air and water resistance. Depending on the experience of the learners as Engineers, making a prototype machine is an option but should focus on mechanical systems if a design process is used. <u>Year 6</u> Electrical systems knowledge Children understand and use electrical systems in their products linked to science coverage.	<u>Design</u> Children generate innovative ideas through research including surveys, interviews, questionnaires and discussion. Children investigate and analyse a range of existing products. Children understand how key events and individuals in design and technology have helped shape the world. Children can use their engineering skills from previous enquiries to present a detailed analysis of their product. Make/Evaluate Children communicate ideas through annotated sketches and pictorial representations from different views. <u>Evaluate.</u> Children understand and describe mechanical systems in their evaluation of products [for example, gears, pulleys, cams, levers and linkages] Children understand and describe electrical systems in their evaluation of products [for example, series circuits incorporating switches, bulbs, buzzers and motors]
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			Children use technical vocabulary relevant to the enquiry. Mechanical systems knowledge Children understand that mechanical and electrical systems have an input, process and output. Children understand how gears and pulleys can be used to speed up, slow down or change the direction of a movement. Children know and use technical vocabulary relevant to the enquiry.	
	Where is our twin? (6)	<u>Design</u> ♣ 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, pattern pieces and computer-aided design <u>Make</u> ♣ 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 of textiles according to their functional properties and aesthetic qualities <u>Evaluate</u> ♣ 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 <u>Technical knowledge</u> ♣ apply their understanding of how to strengthen, stiffen and reinforce more complex structures	<u>Previous enquires in LKS2 that should be used to develop skills and knowledge within this enquiry.</u> Ear defenders. Why did people travel in the past? (5) Children will have developed skills for basic sewing. • <u>Designer/ Engineer:</u> Lucienne Day. A woman credited with adding colour back into the wardrobes of Post World War Two Britain, Lucienne Day was inspired by the likes of Kandinsky. ... • Cath Kidston. ... • William Morris. ... • Mary White. ... • Laura Ashley. ... • Terence Conran. <u>Vocabulary:</u> Design- design specification, design brief, design purpose, prototype, and annotated sketches. Make: seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces, fastening, pinking shears Evaluate: function, innovative, research findings, functional <u>Knowledge</u> Children know how to use research to develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups. Children know how to use skills developed in Year 3/4 for textiles. They should have an understanding of the qualities of materials and can choose appropriate tools to cut and shape (such as the nature of fabric may require sharper scissors than would be used to cut paper). They should be able to explain how they used different techniques for cutting and joining fabric. Children can use technical vocabulary to explain their design to an audience. <u>Year 5</u> Children are able to transfer a pattern to fabric. Children are able to use class discussion to make appropriate choices in relation to stitches to join fabric (back stitch, blanket stitch, running stitch, catch stitch, whip stitch), and apply decorative stitches/tapestry stitches; chain stitch or French knot. Children can investigate simple quilting techniques. Children understand how fabrics can be strengthened, stiffened and reinforces where appropriate. <u>Year 6</u> Children are able to draw a pattern and transfer to fabric. Children are able to use appropriate stitches to join fabric (back stitch, blanket stitch, running stitch, catch stitch, whip stitch), and apply decorative stitches/tapestry stitches; chain stitch and French knot. Children can investigate applique within their design (as multiple layers fixed in place).	Children can select from and use a wider range of textiles, according to their functional properties and aesthetic qualities Children can cut materials with precision and refine the finish with appropriate tools (such as scissors, cutting tools, threads) Children can develop a range of practical skills to create products (such as cutting, selecting sewing stitches, selecting appropriate decorations). Children can add features to address aesthetic qualities. Children produce a 3d textile product from a combination of accurately made pattern pieces, fabric shapes and different fabrics. (This should be as part of an engineering team rather than several individual pieces of work). Children can evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. (There should be evidence of a review and modification of design in the final piece of work).

	What makes a good performance great? (2)		NOT Engineering	
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