

• Technical Knowledge - Understand how to build and strengthen structures, use mechanical systems and understand and use electrical systems or computing in their products.

Safely use and explore a variety of materials, tools and techniques, exper FS1 Autumn Term Spring Term Summer Term				imenting with colour, design, t Autumn Term	exture, form and function; FS2 Spring Term	Summer Term
	All About Me	Story Festival	Living things	All About Me		
Project and Brief	Sewing patterns with thread and beads.	Box modelling to make story characters.	Bake various recipes using fruit and vegetables.	Sewing a picture on fabric to make a calendar.	Box models linked to topic, using variety of resources.	Bake various recipes using fruit and vegetables or sweet treats.
Substantive Knowledge	I know how to thread a large needle. I can push the needle through the fabric. I can choose how to make my picture look. I can say what I like about my sewing.	I know that I can represent characters using box modelling. I can choose how to colour and shape my model. I can join different materials using glue or tape.	I know how to use a knife carefully to chop. I understand the need for hygiene when preparing food. I can suggest ideas for new recipes. I can say what I like or dislike about my cooking.	I know how to thread my own needle. I can sew a running stitch up and down through the fabric. I can choose my own design and colours. I can say what I like about my sewing. I can say what I would change next time.	I know that I can use a box to represent an object. I know that I can add other materials to make my model better. I can choose an appropriate way to join materials, e.g. tape or glue. I can say what i would change about my model next time.	I know that some foods are healthy and some are not as healthy. I know what a recipe is and can follow instructions. I can use a knife carefully to chop. I understand and use good hygiene practices. I can think of new ideas and suggest ingredients. I can describe what I like or dislike about tastes and textures and why.

EYFS - End Point (ELG)

• Use a range of small tools, including scissors, paint brushes and cutlery

Vocabulary	Needle Thread Fabric Beads Sew stitch	Cut Stick Sticky Tape Fasten	Cut f Chop E Mix - Bake F Hot Soft F Recipe F	Needle Eye Thread Running stitch Knot Fasten Tangle	Join Secure Connect Solid Texture Flaps	Ingredients Recipe Instructions Slice Texture Beat Cream (verb)	
Key Stage 1 - End Point (NC) Key Stage 2 - End Point (NC)							
Through a the knowl process or contexts local comr	a variety of creative and edge, understanding and f designing and making. (For example, the home o nunity, industry and the	practical activities, pu skills needed to engage They should work in a r and school, gardens and wider environment.	pils should be taught e in an iterative range of relevant d playgrounds, the	Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts (For example, the home, school, leisure, culture, enterprise, industry and the wider environment.			
		Birkwo	od Primary School D Key Stage 1 c	Design Technology Curri and Key Stage 2	iculum		
			Autun	nn Term			
Project	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	
and brief	Wooden Reindeer Christmas Decorations	Making Clocks	Jewellery Making	Book sleeves	Christmas Decorations	Christmas Cake Cook it Week	
	Design and make a wooden reindeer decoration.	Design and make a clock for a child's bedroom.	Design and make a piece of jewellery for someone you know	Design and make a fabric book sleeve for a notebook.	Design and make fabric decorations to hang on the Christmas tree.		

Sequence	Lesson 1	Lesson 1	Lesson 1	Lesson 1	Lesson 1	
Dequence	Hook – Research Reindeer – book a	Hook - Clip of Alice In wonderland	Hook – Jewellery worn by	Hook – Look at selection of book sleeves	Hook – Have a crafter come into school	
of	visit from a reindeer/webcam to see	- time.	celebrities/royalty. Look at priceless	 link to special holy books. 	to set up their craft stall and share their	
lasses	one live and discuss purpose of		jewellery and selection of dress	Prior knowledge	Christmas creations with the children.	
lessons	selling items at Christmas Fayre	Prior Knowledge	jewellery.	What is a book sleeve? Why we need	Prior knowledge	
	Purpose – we need to raise money	The features of a clock, a face,	Prior knowledge	them. How to join fabrics by sewing. How	Look at a collection of different textile	
	for	numbers and mechanism.	What type of jewellery do we wear?	to make creative artwork on fabric.	decorations. What are they made from?	
	Prior knowledge	How to cut wood using a saw.	What is it made from? Why do we	<u>Design</u>	made with? what different designs are	
	How to use a drill to make holes.	How to drill holes using a hand	wear it? Know how jewellery fastens.	Introduce the brief – Design and make a	there? Can you consider how we could	
	How to connect pieces using linking.	drill.	Know what type of designs can be	special fabric book sleeve for a diary or	use any of these to create an outcome?	
	Design	Finishing techniques to make It	made with resin.	notebook for yourself.	Market research – Can they quiz parents	
	Introduce the brief – Make a	look attractive.	Design	What design will it have? How will it be	at home – what simple design would	
	Reindeer decoration to hang on the	<u>Design</u>	Children given time to plan out their	fastened on? How big will it be? Will it	they buy at our Christmas fair?	
	tree.	Introduce the brief - Design and	jewellery designs. Include	contain padding/wadding?	<u>Design</u>	
	Purpose	make a clock for a child's	measurements. What shape mould		Children given time to plan out their	
	Who is it for?	bedroom.	will they use? What will go inside the	Lesson 2/3	designs for sale. Take home to ask	
	What features does it need? How	Purpose	resin? How will it be worn? How will it	Make	parents. Possible mood boards of	
	will the pieces be connected?	Who is it for?	fasten? Clasp, button, tie.	Cut the fabric to the required size.	ideas/materials/stitches. Ideas: wall	
	Children create their own design	How will It look?		Decorate the fabric using applique or silk	hangings, blankets, cushions etc.	
	and label/ list materials.	What materials and tools will we	Lesson 2/3	painting techniques.		
		use? Will It stand or hang?	<u>Make</u>		Lesson 2	
	Lesson 2/3	Children create their own design	Gather together all the materials	Lesson 3/4	<u>Teach/Design</u>	
	<u>Make</u>	proposal Including labels and	needed. Arrange the items to go in	<u>Make</u>	Teach range of stitch methods: whip,	
	Select the pieces for head, body and	materials/equipment.	the mould, Try out a few ideas to	Fold and secure the fabric to make the	back, overcast, slip stitch. Teach range of	
	legs. Drill the holes with a hand drill.		make the pattern/picture or items	sleeve – sew or glue as on their design.	stitches they then practice these on small	
	Connect the main pieces using	Lesson 2/3	look attractive. Carefully measure and	Add any finishing touches and tidy up any	pieces of fabric.	
	chosen materials, e.g. pipe cleaners,	Make	mix the resin and water. Pour resin	edges.		
	string, wire.	Measure, mark and cut the shape	into the mould and leave to harden.		Refine designs based on feedback from	
		of the clock face using a junior		Lesson 5	parents. What do they want to make for	
	Lesson 3/4	hacksaw.	Lesson 3/4	Evaluate	their parent to purchase at the fair?	
	Make	Sand the rough edges.	<u>Make</u>	lime to finish off pieces, check against	Conversion detailed desire has all	
	Add the legs and antiers,	Drill the noie for the mechanism.	Remove from moulds and sand the	design briefs. Can pupils peer assess one	Ensure clear, detailed design has all	
	considering joining techniques and	Mark out and add the numbers.	rough edges. Drill noies for fasteners	another s? Then return to evaluate own	necessary measurements and materials	
	add the collage materials for detail.	1 2/4	and attach the fasteners.	designs based on feedback. Does it look	recorded. Include stitch types required at	
	Losson F	Lesson 5/4	Losson F	fostened? Chara their finished products	each point.	
	Half class evaluate and half finishing	Attach the mechanism make the	Evaluate	with another class for positive feedback	Lesson 3/4	
	techniques then swan	stand or hanging mechanism	Time to finish off nieces, check against	What could they improve if they did it	Make	
	Finishing	Add the decoration paint or	design briefs. Can pupils peer access	again?	Model how to measure and cut fabric	
	Ch to finish their Reindeer by	colours	one another's? Then return to	agaiii:	accurately. Children to complete this	
	painting/varnishing_adding_other	colours.	evaluate own designs based on		Model how to stitch using needle and	
	features what else could we do to	Lesson 5	feedback. Does it look how they		thread	
	improve it? How will it hang on the	Evaluate	intended? Is it strong enough to		an each	
	tree?	Half class evaluate and half	wear? Model their jewellerv for peers		Flipped learning videos on inads for	
	Evaluate	finishing techniques then swap	or other classes.		children to use as they are ready to	
	Against the brief – does it hang? Is it	Finishing			stitch, *If possible 2 x Tas in class	
	strong enough? Are the connections	Ch to finish their clock by			working at one table each to model and	
	secure? Does it look good? what	painting/varnishing, adding other			re-model stitching process.	
	could be improved if we did this	features, what else could we do			01	
	again?	to improve it?			Lesson 5	
		Evaluate			Evaluate	

		Against the brief – Is it attractive? Does it work? How will it hang/stand? What could be improved if we did it again?			Time to finish off pieces, check against design briefs. Can pupils peer assess one another's? Then return to evaluate own designs based on feedback. Pictures sent home as adverts for parents to order prior to Christmas Fayre.	
Design						
Understanding contexts, users and purposes.	Work confidently within a range of contexts, such as imaginary, story based, home, school, gardens, playgrounds, local community, industry and the wider environment. State what products they are designing and making. Say whether their products are for themselves or other users. Say how their products will work. Say how their products will work. Say how they will make their products suitable for their intended users.	Work confidently within a range of contexts, such as imaginary, story based, home, school, gardens, playgrounds, local community, industry and the wider environment. State what products they are designing and making. Say whether their products are for themselves or other users. Describe what their products are for. Say how their products will work. Say how their products will work. Say how they will make their products suitable for their intended users. Use simple design criteria to help develop their ideas.	Work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment. Describe the purpose of their products. Indicate the design features of their products that will appeal to intended users. Gather information about the needs and wants of particular individuals and groups.	Work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment. Describe the purpose of their products. Indicate the design features of their products that will appeal to intended users. Gather information about the needs and wants of particular individuals and groups.	Work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment. Describe the purpose of their products. Indicate the design features of their products that will appeal to intended users. Gather information about the needs and wants of particular individuals and groups.	
Generating, developing, modelling and communicating ideas	Generate ideas by drawing on their own experiences. Use knowledge of existing products to help come up with ideas. Develop and communicate ideas by talking and drawing.	Generate ideas by drawing on their own experiences. Use knowledge of existing products to help come up with ideas. Develop and communicate ideas by talking and drawing.	Share and clarify ideas through discussion. Model their ideas using prototypes and pattern pieces. Use computer aided design to develop and communicate their ideas. Generate realistic ideas, focussing on the needs of the user. Make design decisions that take account of the availability of resources.	Share and clarify ideas through discussion. Model their ideas using prototypes and pattern pieces. Generate realistic ideas, focussing on the needs of the user. Make design decisions that take account of the availability of resources.	Share and clarify ideas through discussion. Model their ideas using prototypes and pattern pieces. Generate realistic ideas, focussing on the needs of the user. Make design decisions that take account of the availability of resources.	

Planning	Plan by suggesting what to do next.	Select tools and equipment suitable	Select tools and equipment suitable for	Select tools and equipment suitable for	
		for the task.	the task.	the task.	
	Select from a range of tools and equipment, explaining their choices.				
		Explain their choice of tools and	Explain their choice of tools and	Explain their choice of tools and	
	Select from a range of materials and components according to their	equipment in relation to the skills and	equipment in relation to the skills and	equipment in relation to the skills and	
	characteristics.	techniques they will be using.	techniques they will be using.	techniques they will be using.	
		Select materials and components	Select materials and components	Select materials and components	
		suitable for the task	suitable for the task	suitable for the task	
		suitable for the task.	Suitable for the task.	Suitable for the task.	
		Explain their choice of materials and	Explain their choice of materials and	Explain their choice of materials and	
		components according to functional	components according to functional and	components according to functional and	
		properties and aesthetic qualities.	aesthetic qualities.	aesthetic qualities.	
			Produce appropriate lists of tools,	Produce appropriate lists of tools,	
		Order the main stages of making.	equipment and materials that they need.	equipment and materials that they need.	
			Formulate stan by stan plans as a guide	Formulate step by step plane as a guide	
			to making	to making	
			to making.	to making.	
Practical skills	Follow procedures for safety and hygiene	Follow procedures for safety and	Use a wider range of materials and	Follow procedures for safety and	
and techniques	Follow procedures for survey and hygicite.	hygiene	components	hygiene	
una cominques	Use a range of materials and components, including construction		components,		
	materials and kits, textiles, food ingredients and mechanical components.	Use a wider range of materials and	Accurately measure, mark out, cut and	Use a wider range of materials and	
	, , , , , , , , , , , , , , , , , , , ,	components than KS1, including	shape materials and components.	components,	
	Measure, mark out, cut and shape materials and components.	construction materials and kits,		• •	
		textiles, food ingredients, mechanical	Accurately assemble, join and combine	Accurately measure, mark out, cut and	
	Assemble, join and combine materials and components.	components and electrical	materials and components.	shape materials and components.	
		components.			
	Use finishing techniques including those from Art and Design.		Accurately apply a range of finishing	Accurately assemble, join and combine	
		Measure, mark out, cut and shape	techniques including those from art and	materials and components.	
		materials and components with some	design.		
		accuracy.		Accurately apply a range of finishing	
		Assemble, isin and combine meterials	Use techniques that involve a number of	design	
		and components with some accuracy	steps.	design.	
		Apply a range of finishing techniques	Demonstrate resourcefulness when	Use techniques that involve a number of	
		including those from art and design	tackling practical problems.	steps.	
		with some accuracy.			
		·		Demonstrate resourcefulness when	
				tackling practical problems.	
Evaluate					
Own ideas and	Talk about the design ideas and what they are making.	Identify the strengths and areas for	Identify the strengths and areas for	Identify the strengths and areas for	
products	Make simple judgements about their products and ideas against design	development in their ideas and	development in their ideas and products.	development in their ideas and products.	
	criteria.	products.			
	suggest now their products could be improved.	Consider the views of others include	Consider the views of others, including	Consider the views of others, including	
		intended users, to improve their work	intended users, to improve their work.	intended users, to improve their work.	
		intended users, to improve their work.	Critically evaluate the quality of the	Critically evaluate the quality of the	
		Refer to their design criteria as they	design manufacture and make	design manufacture and make	
		design and make.	accient, manaractare and make.	action, manadetare and make.	

			Use their design criteria to evaluate their completed products.	Evaluate their ideas and products against their original design specification.	Evaluate their ideas and products against their original design specification.	
Existing products	What products are. Who products are for. What products are for. How products are used. Where products might be used. What materials products are made from. What they like and dislike about products.		How well products have been designed. How well products have been made. Why materials have been chosen. What methods of construction have been used. How well products work and achieve their purposes. How well products meet user needs and wants. Who designed and made the products. Where and when products were designed and made. Whether products can be recycled or reused.	How well products have been designed. How well products have been made. Why materials have been chosen. What methods of construction have been used. How well products work and achieve their purposes. How well products meet user needs and wants. How much products cost to make. How innovative products are. How sustainable the materials in products are. What impact products have beyond their intended purpose.	How well products have been designed. How well products have been made. Why materials have been chosen. What methods of construction have been used. How well products work and achieve their purposes. How well products meet user needs and wants. How much products cost to make. How innovative products are. How sustainable the materials in products are. What impact products have beyond their intended purpose.	
Key events and individuals	Not a require	ment in KS1	About inventors, designers, engineers, ch	hefs and manufacturers who have developed a	ground-breaking products.	_
Technical knowledge						
Making products work.	About the simple working characteristics of materials and components. How freestanding structures can be made stronger, stiffer and more stable. The correct technical vocabulary for the projects they are undertaking.	About the simple working characteristics of materials and components. About the movement of simple mechanisms such as levers, sliders, wheels and axles. How freestanding structures can be made stronger, stiffer and more stable. The correct technical vocabulary for the projects they are undertaking.	How to use learning from science to help design and make products that work. How to use learning from maths to help design and make products that work. That materials have both functional properties and aesthetic qualities. That materials can be combined and mixed to create more useful characteristics. The correct technical vocabulary for the projects they are undertaking	That materials have both functional properties and aesthetic qualities. That materials can be combined and mixed to create more useful characteristics. The correct technical vocabulary for the projects they are undertaking. How to use learning from science to help design and make products that work.	That materials have both functional properties and aesthetic qualities. That materials can be combined and mixed to create more useful characteristics. The correct technical vocabulary for the projects they are undertaking. How to use learning from science to help design and make products that work.	
Vocabulary	Product Design Function Cutting Shaping Joining Finishing Structure Stable Stronger Stiffer Evaluate	Product design mechanism bench hook hacksaw Drill bit Stand Stable Sandpaper Smooth Shiny Finishing techniques Evaluate	Priceless (Names of priceless pieces) Dress Jewellery Resin Properties Characteristics Setting Hardening Mould Clasp Aesthetic	Fabric Sleeve Design Applique Batik Silk painting Secure Aesthetic	Crafter/crafting Fabric Textiles (specific names of each fabric offered) Mood board Cross stitch Blanket stitch Chain stitch Back stitch Satin stitch Applique	

Spring Term								
Project and Brief	Year 1 Fire Engines	Year 2 Hospital	Year 3 Crane with winch	Year 4 Catapults	Year 5 Motorised Buggy	Year 6 Anderson Shelter		
	Design and make a Fire Engine with a moving ladder.	Design and make a Nightingale Hospital.	Design and make a Crane with a winch.	Design and make a working catapult.	Design and make a motorised buggy.	Design and make an Anderson Shelter with a light.		

lessons f Sequence

Lesson 1 Hook – Invite fire service to bring fire engine, or fire fighter to come

and show videos. Purpose - we need help!

Prior knowledge

How to use card triangles, hole punched to support axle. How axles work

Design

Intoduce the brief – Make a fire engine with moving wheels. Purpose

Who is it for? What features does it need? How will the wheels be held on? Children create their own design and label/ list materials.

Lesson 2/3 Make

Sand the block of wood and the wheels. Cut the dowels with a junior hacksaw. Investigate varied lengths, what works? Is it long enough etc.

Lesson 3/4 Make

Make the ladder – discuss how ladder needs to be strong, give range of materials, lollypop sticks. dowel, art straws. etc. Encourage measuring for the correct length.

Lesson 5

Half class evaluate and half finishing techniques, then swap.

Finishing

Ch to finish their fire engine by painting/varnishing, adding other features. Use video of fire engine what else could we do to improve it. Evaluate

Against the brief – do the wheels turn? Is the ladder suitable, is it stable, what could be improved if we did this again?

Lesson 1 Hook

Prior Knowledge What Is a design? How to make the wooden structure (solid front and back wall and wooden pieces In between) How to join using card triangles and PVA glue. Finishing techniques to make It look like a hospital. Design

Introduce the brief - Make a 3D nightingale hospital which Is stable and has the hospital markings.

Purpose Who is it for? How will It look?

What materials and tools will we use? Children create their own design proposal Including labels and materials/equipment.

Lesson 2/3 Make

Measure, mark and cut the pieces for the front, back and the lengths In between using a junior hacksaw. Make sure the wooden pieces are exactly the same length. Use card triangles to make the structure stay together, find ways to hold It In place until the glue dries.

Lesson 3/4

Make Finish making the hospital structure and add a roof and walls. .

Lesson 5

Half class evaluate and half finishing techniques, then swap. Finishing Ch to finish their hospital by painting/varnishing, adding other

features. Show images of

Lesson 1

Hook – New building work taking place at school, steel rods, bricks etc would need to be moved from one place to another.

Prior knowledge

Children given a range of devices/toys etc with simple pulleys and levers, watch videos of cranes at work. Time to explore – how do these work? Can they use a basic system of ropes/levers/pulleys to move some objects from one place to another? What purpose would these have in real life?

Lesson 2 Design

Share the brief – discuss the terminology – what do we need in order to make this device? A crane with a winch- a fixed pulley system. An axle and wheel system is required to make the winch move. The wheels will require a groove for the rope/string to rest in and move through smoothly. The force will help to lift to object (load).

Children given time to plan a small scale crane with a working winch. Share some designs and discuss size, etc.

Lesson 3/4 Make

1 half of class - Measure and cut all elements of the crane design. Other half of class - create working winch. Use of videos for flipped learning for children to re-watch to make the winch work. T/TA to support each group with focused modelling.

Lesson 5 Evaluate

Given some lego bricks, can they practise with their cranes and using winches to move bricks from one space to another? Can they then evaluate the outcome of their design and its purpose? How could they improve their design?

Lesson 1

Hook – End of project, Have a mini war. two teams to knock down each others paper cup buildings.

Prior Knowledge

What Is a design? How do catapults work? How to use hot melt glue to join materials (For the posts.) How to use a hand drill to make holes in the wooden posts. Design

Introduce the brief – Make a working catapult which Is stable and looks attractive.

Purpose

What Is It for? How far does it need to project? How will It look? What materials and tools will we use? Children create their own design proposal Including labels and materials/equipment.

Lesson 2/3 Make

Measure, mark and cut the pieces for the supports, dowel for the cross pieces and for the catapult arm. Drill holes using hand drill, making sure these are carefully measured and line up! Start to assemble.

Lesson 3/4

Make Assemble the mechanism and add a hook to hold the elastic band.

Lesson 5

Half class evaluate and half finishing techniques, then swap. Finishing

Ch to finish their catapult by painting/varnishing, decorating. what

else could we do to improve it? Evaluate

could be improved if we did it again?

Against the brief – Is it stable? Does is work? How far does it project? How could we make it project further. What

Prior knowledge

What knowledge will you need to create a motorised buggy? Show finished product and basic design. Discuss what is needed. What have they used before? Junior hacksaw, bench hook, G clamp, coping saw, etc. How important are measurements?

Hook - Mr Wood video - his new car is apparently designed on the basis of a motorised buggy - can they design and make a prototype small scale model so he can check this against his new car?

Lesson 2 Design

Lesson 1

Design brief shared, cross sectional design/diagram example shared. Which would be more beneficial for you to design your motorised buggy? What are key elements? Axles, wheels, structure to hold together, motorised element. Science link circuits/motor. Design buggy and add all elements

required in detail.

Lesson 3/4 Make

Given design briefs and shown a working prototype, have half the class creating circuits with motors and the other half creating structures with axles and wheels

Sanding, measuring, cutting, checking against brief and purpose/outcome. Attach motor circuit to wheel system so they move forwards.

Lesson 4 Make

Finish structure and motorised element. Ensure buggy moves. Trial on test track. Come back to re-structure/re-shape and edit where necessary.

Lesson 5 Evaluate

Re-watch video of Mr Wood – check design briefs. Can we check the buggy works and allow peers to test it? What

Lesson 1 Prior knowledge

What do they remember about building structures from previous lessons/ years? Can they recall how to make a solid structure which could hold some weight? Given some different materials to investigate, which would be the best to build a shelter from and why?

Hook – Letter from Mr Tom (Goodnight Mr Tom) he needs their help to build a better structure as his is falling to pieces. Look at some examples of Anderson shelters and what they were for.

Science link – working circuit for light to be included.

Lesson 2 Design

Introduce the design brief linked to the hook. Main elements are: Building structure from wood – what would the basic structure be? Is this the most suitable shape for rigidity? Have a prototype to use as an enquiry tool or short video of it/pics. Can they design and use accurate measures to map out their design concept. Challenge – exploded design of shelter with detailed explanations of each element.

Working light feature – What electrical circuit is required?

Lesson 3 Make

Pupils given measuring materials, and building materials and measure accurately each piece they require according to the design.

Model expectations with junior hacksaws and measurement tools. (Videos or live lesson) Can a circuit be included to have a basic switch which works when the shelter door is closed?

Lesson 4 Make

Following design brief, have they measured accurately, how can the structure be held together? Will it work with hot glue or PVA and triangular wooden structures to strengthen the hold? Time to experiment with small off cuts.

		different hospitals over the years, what else could we do to improve it? Evaluate Against the brief – Is it stable? Does the roof fit correctly? What could be improved if we did it again?			are their comments/ feedback? Time to evaluate own design and product. Does it fit the brief? Send video to Mr Wood, Or Mr Wood comes and judges outcomes.	Once decided, stick together and build 3D structure of skeleton of shelter. Challenge: Could holes be drilled and small wooden dowels be used to hold pieces together? Lesson 5 <u>Make/Evaluate</u> Now the structure is built, what other elements of the design brief need adding to achieve the end outcome? Does it fit the design brief? Does it help Mr Tom (Hook)? Does the light work? Does it turn on when the door is closed? Evaluate Post pics on Seesaw/Twitter for others to evaluate or have stations in class where pupils can peer assess against design briefs and end structures. Leave post it notes for feedback. Come back and share, write own evaluation with peer ideas included. Could some create small re-design?
Design						
Understanding contexts, users and purposes.	Work confidently within a range of contexts, such as imaginary, story based, home, school, gardens, playgrounds, local community, industry and the wider environment. State what products they are designing and making. Describe what their products are for. Say how their products will work. Use Simple design criteria to help develop their ideas.	Work confidently within a range of contexts, such as imaginary, story based, home, school, gardens, playgrounds, local community, industry and the wider environment. State what products they are designing and making. Describe what their products are for. Say how their products will work. Use Simple design criteria to help develop their ideas.	Work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment. Explain how particular parts of their products work. Gather information about the needs and wants of particular individuals and groups. Develop their own design criteria and use these to inform their ideas.	Work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment. Explain how particular parts of their products work. Gather information about the needs and wants of particular individuals and groups. Develop their own design criteria and use these to inform their ideas.	Work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment. Describe the purpose of their products. Indicate the design features of their products that will appeal to intended users. Explain how particular parts of their products work. Develop a simple design specification to guide their thinking.	Work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment. Describe the purpose of their products. Indicate the design features of their products that will appeal to intended users. Explain how particular parts of their products work. Carry out research, using surveys, interviews, questionnaires and web based resources. Identify the needs, wants, preferences and values of particular individuals and groups. Develop a simple design specification to guide their thinking.
Generating, developing, modelling and communicating ideas.	Generate ideas by drawing on their own experiences. Use knowledge of existing products to help come up with ideas.	Generate ideas by drawing on their own experiences. Use knowledge of existing products to help come up with ideas.	Share and clarify ideas through discussion. Use annotated sketches, cross sectional drawings and exploded diagrams to develop and communicate their ideas.	Share and clarify ideas through discussion. Use annotated sketches, cross sectional drawings and exploded diagrams to develop and communicate their ideas.	Share and clarify ideas through discussion. Use annotated sketches, cross sectional drawings and exploded diagrams to develop and communicate their ideas.	Share and clarify ideas through discussion. Model their ideas using prototypes and pattern pieces.

	Develop and communicate ideas by talking and drawing.	Develop and communicate ideas by talking and drawing.	Generate realistic ideas focussing on the needs of the user. Make design decisions that take account of the availability of resources.	Generate realistic ideas focussing on the needs of the user. Make design decisions that take account of the availability of resources.	Generate innovative ideas, drawing on research. Make design decisions, taking account of constraints such as time, resources and cost.	Use annotated sketches, cross sectional drawings and exploded diagrams to develop and communicate their ideas. Generate innovative ideas, drawing on research. Make design decisions, taking account of constraints such as time, resources and cost.
Make						
Planning Practical skills and techniques	a Plan by suggesting what to do next. Select from a range of tools and equipment, explaining their choices. Select from a range of materials and components according to their characteristics. skills Follow procedures for safety and hygiene. Use a range of materials and components, including construction materials and kits, textiles, food ingredients and mechanical components. Measure, mark out, cut and shape materials and components.		Select tools and equipment suitable for the Explain their choice of tools and equipment they will be using. Select materials and components suitable Explain their choice of materials and com and aesthetic qualities. Order the main stages of making. Follow procedures for safety and hygiene Use a wider range of materials and components. Measure, mark out, cut and shape materials and components.	the task. ent in relation to the skills and techniques e for the task. nponents according to functional properties e. e. ponents than KS1, including construction nts, mechanical components and electrical rials and components with some accuracy.	 Explain their choice of tools and equipment in relation to the skills and techniques they will be using. Select materials and components suitable for the task. Explain their choice of materials and components according to functional and aesthetic qualities. Produce appropriate lists of tools, equipment and materials that they need. Formulate step-by-step plans as a guide to making. Follow procedures for safety and hygiene. Use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components. Accurately measure, mark out, cut and shape materials and components. 	
Evaluate Own ideas and products	Use finishing techniques including those from Art and Design. nd Talk about the design ideas and what they are making. Make simple judgements about their products and ideas against design criteria. Suggest how their products could be improved.		some accuracy. Identify the strengths and areas for deve Consider the views of others, including in Refer to their design criteria as they desi Use their design criteria to evaluate their	lopment in their ideas and products. Itended users, to improve their work. gn and make.	Accurately apply a range of finishing technic Use techniques that involve a number of sto Demonstrate resourcefulness when tackling Identify the strengths and areas for develop Consider the views of others, including inte Critically evaluate the quality of the design, Evaluate their ideas and products against th	ques including those from art and design. eps. g practical problems. ment in their ideas and products. nded users, to improve their work. manufacture and make. neir original design specification.
Existing products	What products are. Who products are for. What products are for. How products work.		How well products have been designed. How well products have been made.		How well products have been designed. How well products have been made.	

	How products are used. Where products might be used. What materials products are made from. What they like and dislike about products.		What methods of construction have been used. How well products work and achieve their purposes. How well products meet user needs and wants. Who designed and made the products. Where and when products were designed and made.		Why materials have been chosen What methods of construction have been used. How well products work and achieve their purposes. How well products meet user needs and wants. How much products cost to make How innovative products are.	
			Whether products can be recycled or ret	used.	How sustainable the materials in products . What impact products have beyond their in	are. Itended purpose.
Key events and individuals			About inventors, designers, engineers, cl	hefs and manufacturers who have developed	ground-breaking products.	
Technical knowledge						
Making Products work	About the simple working characteristics of materials and components. About the movement of simple mechanisms such as levers, sliders, wheels and axles. The correct technical vocabulary for the projects they are undertaking.	About the simple working characteristics of materials and components. How freestanding structures can be made stronger, stiffer and more stable. The correct technical vocabulary for the projects they are undertaking.	 How to use learning from science to help design and make products that work. How to use learning from maths to help design and make products that work. That materials have both functional properties and aesthetic qualities. That materials can be combined and mixed to create more useful characteristics. That mechanical and electrical systems have an input, process and output. The correct technical vocabulary for the projects they are undertaking. How mechanical systems such as levers and linkages or pneumatic systems create movement. How to make strong, stiff, shell structures. 	How to use learning from science to help design and make products that work. How to use learning from maths to help design and make products that work. That materials have both functional properties and aesthetic qualities. That materials can be combined and mixed to create more useful characteristics. That mechanical and electrical systems have an input, process and output. The correct technical vocabulary for the projects they are undertaking. How mechanical systems such as levers and linkages or pneumatic systems create movement.	 How to use learning from science to help design and make products that work. How to use learning from maths to help design and make products that work. That materials have both functional properties and aesthetic qualities. That materials can be combined and mixed to create more useful characteristics. That mechanical and electrical systems have an input, process and output. The correct technical vocabulary for the projects they are undertaking. How mechanical systems such as levers and linkages or pneumatic systems create movement. How more complex electrical circuits and components can be used to create functional products. How to reinforce and strengthen a 3D framework. 	 help design and make products that work. How to use learning from maths to help design and make products that work. That materials have both functional properties and aesthetic qualities. That materials can be combined and mixed to create more useful characteristics. That mechanical and electrical systems have an input, process and output. The correct technical vocabulary for the projects they are undertaking. How more complex electrical circuits and components can be used to create functional products.
Vocabulary	Chassis Axle	Building Structure	Structure Mechanism	Catapult Stable	Cross sectional design Motorised	Specification Functional

	Mechanism Slider Stable Moveable	Stable Saw Measure Suitable Evaluate	Connect Attach Pulley Winch Fixed pulley system Axel	Project (verb- throw) Structure Mechanism	Circuit Prototype Trial Restructure Reshape Edit	Elements Circuits Prototype		
Summer Term								
Project and brief	Year 1 Puppets Design and make a puppet.	Year 2 Mechanisms Design and make a toy with moving parts	Year 3 Textiles - Cushions Design and make a cushion for	Year 4	Year 5 Textiles Sampler - range of stitches	Year 6 Digital world - Lego		

Lesson 1

Prior knowledge

Have a selection of puppets available for pupils to explore. What are they made from, made with, what different designs are there? Can you consider how we could make our own?

Hook - EYFS story sacks need revamping. OR: Link to Geog – Barnsley Town Centre would like some street entertainment this summer and want some puppet shows. Watch Punch & Judy etc for inspiration. Could focus on one story's characters such as Gruffalo.

Lesson 2 Design

Children given time to plan out their puppet designs. Measurements given/suggested - use of hands for specifics and dimensions of puppet material. Design on one outer side of the puppet for decorative effect. *Could use book characters etc.

Lesson 3/4 Make

lessons

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Sequence

Cut and stitch the elements to one side of the puppet for the decorative side.

Model how to measure and cut fabric accurately. Children to complete this. Model how to stitch using needle and thread. Flipped learning videos on ipads for children to use as they are ready to stitch. *If possible 2 x Tas in class working at one table each to model and remodel stitching process. Teach whip stitch – model this expectation throughout.

Lesson 5 Evaluate

Time to finish off pieces, check against design briefs. Can pupils test on each other? Do they work as puppets and could they be used in a show? Then return to evaluate own

Lesson 1 Prior knowledge

How do levers work in a mechanism? Have a range of mechanisms with levers and ask pupils to explore these. What could we use levers for? Show toys which use these such as a jack in a box etc.

Design

EYFS require some new toys in their unit and would like us to create them. Can you design a basic pop-up toy which is suitable for EYFS? Time to mood board and research.

Lesson 2 Make

Time to refine designs and find out what EYFS interests are. Use these to create product. Model lever mechanism and how this works to create a pop up design. Pupils to create this first.

Lesson 3/4 Make

Time to add levers to overall design of product. Can they test it on each other before allowing pupils from EYFS to play with it?

Lesson 5 Evaluate

EYFS to be toy testers and come to practice using the toys. Can they gather some verbal feedback and record videos/ sound bites for their evaluations? Then add these to website/twitter for parents feedback? Add own evaluation following feedback linked to design brief.

Time to finish off pieces, check against design briefs. Can pupils peer assess one another's? Then return to evaluate own designs based on

Lesson 1 Prior knowledge

Have a selection of cushions available for pupils to explore. What are they made from, made with, what different designs are there? Can you consider how we could make our own? Hook – Our reading areas around school need some reading area cushions to make them more inviting...

Design

Children given time to plan out their cushion designs. Measurements added for specifics and dimensions of cushion material. Design on one outer side of the cushion for decorative effect *Could use book characters etc

2/3 Make

Cut and stitch the elements to one side of the cushion for the decorative side.

Model how to measure and cut fabric accurately. Children to complete this. Model how to stitch using needle and thread. Flipped learning videos on ipads for children to use as they are ready to stitch. *If possible 2 x Tas in class working at one table each to model and re-model stitching process. Teach overcast stitch – model this expectation throughout.

Lesson 3/4

Make As above but stitching 3 edges together, leave one opening to add the stuffing.

Children to estimate and measure how much stuffing required. Stuff and then work in pairs to hold edges together and stitch.

Lesson 5 Evaluate

Lesson 1 Prior knowledge

Have a selection of stitched items - What are they made from, made with, what different designs are there? Can you consider how we could use any of these to create an outcome? Market research - Can they guiz parents at home - what simple design would they buy at our summer fair? Has to include a stitch.

Design

Children given time to plan out their designs for sale. Take home to ask parents. Possible mood boards of ideas/materials/stitches. Ideas: wall hangings, blankets, cushions etc.

Lesson 2 Teach/Design

Teach range of stitch methods: whip, back, overcast, slip stitch. Teach range of stitches they then practice these on small pieces of material.

Refine designs based on feedback from parents. What do they want to make for their parent to purchase at the fair?

Ensure clear, detailed design has all necessary measurements and materials recorded. Include stitch types required at each point.

Lesson 3/4 Make

Model how to measure and cut fabric accurately. Children to complete this. Model how to stitch using needle and thread

Flipped learning videos on ipads for children to use as they are ready to stitch. *If possible 2 x Tas in class working at one table each to model and re-model stitching process.

Lesson 5 Evaluate

Time to finish off pieces, check against design briefs. Can pupils peer assess one another's? Then return to evaluate own

Lesson 1 Prior knowledge

Have a range of videos of computer aided models for pupils to rate and comment on

how these are controlled. Come back together - model coding and how these models are controlled using these. Design

Using Lego bricks and sample models to make some designs and consider outcomes/purpose.

Lesson 2 Design

Pupils given time to create design briefs -Purpose: working vehicles that they can use with Y2. Create showcase in hall for pupils to come and test out. Provide feedback.

Lesson 3/4

Make

Pupils given time to build their models from Lego based on design briefs. Time to then use the software on ipads/laptops to program their models to perform required actions. Time to de-bug programs and refine where necessary.

5 Evaluate

Pupils showing their models working for Y2 to come and test. Evaluations formed from feedback from these pupils. Time to review designs and evaluate own products.

	designs based on feedback – voice recordings for website/Twitter.		feedback. Cushions could – be sent around classes for reading areas, or sold to parents at summer fair.		designs based on feedback. Pictures sent home as adverts for parents to order prior to summer fair.	
Design						
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Make						
Planning	Plan by suggesting what to do next. Select from a range of tools and equipment, explaining their choices. Select from a range of materials and components according to their characteristics.		Select tools and equipment suitable for the task. Explain their choice of tools and equipment in relation to the skills and techniques they will be using. Select materials and components suitable for the task.		Select tools and equipment suitable for the task. Explain their choice of tools and equipment in relation to the skills and techniques they will be using. Select materials and components suitable for the task.	

Practical skills and techniques	Follow procedures for safety and hygiene. Use a range of materials and components, including construction materials and kits, textiles, food ingredients and mechanical components. Measure, mark out, cut and shape materials and components. Assemble, join and combine materials and components. Use finishing techniques including those from Art and Design.	 Explain their choice of materials and components according to functional properties and aesthetic qualities. Order the main stages of making. Follow procedures for safety and hygiene. Use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components. Measure, mark out, cut and shape materials and components with some accuracy. Apply a range of finishing techniques, including those from art and design with some accuracy. 	 Explain their choice of materials and components according to functional and aesthetic qualities. Produce appropriate lists of tools, equipment and materials that they need. Formulate step-by-step plans as a guide to making. Follow procedures for safety and hygiene. Use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components. Accurately measure, mark out, cut and shape materials and components. Accurately assemble, join and combine materials and components. Accurately apply a range of finishing techniques including those from art and design. Use techniques that involve a number of steps. Demonstrate resourcefulness when tackling practical problems. 	
Evaluate				
Own ideas and products	Talk about the design ideas and what they are making. Make simple judgements about their products and ideas against design criteria. Suggest how their products could be improved.	Identify the strengths and areas for development in their ideas and products. Consider the views of others, including intended users, to improve their work. Refer to their design criteria as they design and make. Use their design criteria to evaluate their completed products.	Identify the strengths and areas for development in their ideas and products. Consider the views of others, including intended users, to improve their work. Critically evaluate the quality of the design, manufacture and make. Evaluate their ideas and products against their original design specification.	
Existing products	What products are. Who products are for. What products are for. How products work. How products are used. Where products might be used. What materials products are made from. What they like and dislike about products.	How well products have been designed. How well products have been made. Why materials have been chosen What methods of construction have been used. How well products work and achieve their purposes. How well products meet user needs and wants. Who designed and made the products. Where and when products were designed and made. Whether products can be recycled or reused.	How well products have been designed. How well products have been made. Why materials have been chosen What methods of construction have been used. How well products work and achieve their purposes. How well products meet user needs and wants. How much products cost to make How innovative products are. How sustainable the materials in products are. What impact products have beyond their intended purpose.	

Key events and individuals			About inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products.				
Technical knowledge							
Making Products work	About the simple working characteristics of materials and components. About the movement of simple mechanisms such as levers, sliders, wheels and axles. The correct technical vocabulary for the projects they are undertaking.	About the simple working characteristics of materials and components. How freestanding structures can be made stronger, stiffer and more stable. The correct technical vocabulary for the projects they are undertaking.	How to use learning from science to help design and make products that work. How to use learning from maths to help design and make products that work. That materials have both functional properties and aesthetic qualities. That materials can be combined and mixed to create more useful characteristics. The correct technical vocabulary for the projects they are undertaking. How to make strong, stiff, shell structures.	How to use learning from science to help design and make products that work. How to use learning from maths to help design and make products that work. That materials have both functional properties and aesthetic qualities. That materials can be combined and mixed to create more useful characteristics. That mechanical and electrical systems have an input, process and output. The correct technical vocabulary for the projects they are undertaking. How mechanical systems such as levers and linkages or pneumatic systems create movement.	 How to use learning from science to help design and make products that work. How to use learning from maths to help design and make products that work. That materials have both functional properties and aesthetic qualities. That materials can be combined and mixed to create more useful characteristics. That mechanical and electrical systems have an input, process and output. The correct technical vocabulary for the projects they are undertaking. How mechanical systems such as levers and linkages or pneumatic systems create movement. How more complex electrical circuits and components can be used to create functional products. How to reinforce and strengthen a 3D framework. 	help design and make products that work. How to use learning from maths to help design and make products that work. That materials have both functional properties and aesthetic qualities. That materials can be combined and mixed to create more useful characteristics. That mechanical and electrical systems have an input, process and output. The correct technical vocabulary for the projects they are undertaking. How more complex electrical circuits and components can be used to create functional products.	
Vocabulary	Fabric Design Sewing Thread Detail	Design Materials Tools Lever Slider Movement Evaluate Improve	Fabric (silk, cotton, linen etc.) Texture Dimensions Decorative Improvement Aesthetic		Design Specification Purpose Stitches – running, chain, backstitch, blanket stitch, etc. Decorative Aesthetic	Coding Outcomes Purpose Software Debug	