

All Saints Church of England Primary School Wigston Magna

Subject Leadership





Andrew Owens Design Technology



<u>Contents</u>

Intent	Vision and aims		
	National Curriculum		
Implementation	Lesson Delivery		
	EYFS		
	Coverage		
	Topic Map		
	Skill progression		
	Planning Marking Feedback		
	Assessment		
Impact	Attainment and progress		

Intent

<u>Vision and Aims</u>

Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the

At All Saints, we aim to ensure that all pupils: develop the creative, technical and practical expertise they need to perform everyday tasks confidently and to participate successfully in an increasingly technological world.

National Curriculum Aims

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

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

<u>Implementation</u>

Lesson delivery

Our Design Technology curriculum is split into three different areas: 'cook', 'sew' and 'build'. It is designed so that each year group will complete a unit of work in two different areas once a year. In recognition of limited time and competing curriculum demands at All Saints, each unit has been devised to be delivered in a one week block, twice a year.

Two different 'aspects' of design are interwoven into the three areas of study: the environment and sustainability, and enterprise and innovation. These 'aspects' acknowledge enduring and contemporary concerns of modern design.

Each unit specifies the concepts and skills which the students are expected to learn over the course of a unit. These concepts and skills progress gradually throughout the course of the six years of study.

In 'cook' students learn to cook from recipes which gradually build basic culinary skills, culminating in year six with the creation of a mezze-style meal requiring the pupils to produce various small dishes. Whilst studying these practical skills they learn about concepts relating to food such as nutrition, seasonality, food production, transportation and food from different cultures.

In 'sew' students practise using fabric and thread to learn basic sewing techniques to create objects which demonstrate embroidery, appliqué, weaving and plaiting. Concepts such as the properties and creation of different fabrics, fast fashion, industrialisation, waste, recycling and pollution are interwoven into these activities.

In 'build' students learn about the creation of structures and mechanical and electrical devices to create products such as cars, moving cards, toys and books. This culminates with year six learning to consider the user in real life, designing a water wall for children in reception. Once again, the practical process of designing and creating a product is interleaved with learning about concepts which have a bearing on what the students make. These concepts, for example force, motion and the properties of materials are often connected with those encountered in the science curriculum.

The sequence of lessons in the 'sew' and 'build' areas of study follow a structure to enable the students to become familiar with, understand and practise the process of design: research and investigate, design, make, use and evaluate. The planning for each unit of work specifies the product the children will make, the purpose and user of the product. This specification acknowledges the importance of purpose and user within in the design process. Throughout the course of the lessons the students explore existing

products and their uses, generate ideas and designs by creating drawings and prototypes against criteria which they devise having considered purpose, function and appeal. Evaluation against these criteria concludes the process. Discussion is an important part of this process, as is consideration of the properties of potential materials and the choice of tools. Learning about fundamental concepts, skills, developments in history and understanding of the influence of key individuals in the field are interleaved into this processdriven structure. The students' understanding of key skills and concepts builds from year to year, assessing and cementing prior learning, and therefore the implementation of the curriculum in the given sequence is crucial.

The curriculum is designed to be delivered alongside our art, science and history curricula, as parts of it directly relate to areas of knowledge which the pupils acquire in these subjects. Where a unit looks at concepts which are also addressed in these subjects, the design and technology unit is generally taught after units in these other disciplines. This allows the children to approach their study of design and technology with a degree of confidence and 'expertise' and to consolidate their knowledge by creating connections between the different disciplines.

It is expected that students' study will be recorded in workbooks. These should be viewed as working documents which evidence the design process and may include notes, annotated photographs, drawings, diagrams and photographs of prototypes and finished work, as well as students' evaluation of the projects which they undertake. This will ensure that teachers and pupils alike can easily identify progression in knowledge, process and application of skills.

It is recognised that the procurement and management of resources is a large part of delivering a design and technology curriculum. Every effort has been made to provide for activities which use economic or recycled resources. In addition, the sequence of units ensures that only two year-groups at a time are using the same set of resources so that the purchase of equipment is kept to a minimum.

EYFS Prior Learning

Personal, Social and Emotional Development

- ✤ Managing Self ELG
 - > Understand the importance of healthy food choices.

Physical Development

- ✤ Fine Motor ELG
 - > Use a range of small tools, including scissors, paint brushes and cutlery;
 - > Begin to show accuracy and care when drawing.

Understanding the World

- The Natural World ELG
 - Explore the natural world around them, making observations and drawing pictures of animals and plants;
 - Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class;
 - Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

Expressive Arts and Design

- ✤ Creating with Materials ELG
 - Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form, and function;
 - > Share their creations, explaining the process they have used;
 - Make use of props and materials when role playing characters in narratives and stories.

<u>Curriculum Coverage</u>	General Aims of the Design and Technology National Curriculum for KSI and KS2
Creating a Product: Each unit is centred around creating a product which allows children to develop knowledge of concepts and skills which build their creative, technical and practical expertise.	develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
Concepts and Skills: Each 'Build' and 'Sew' unit follows a structure which allows the children to investigate, make, design and evaluate a product for a particular user. In doing so they develop knowledge of concepts and skills related to the products they make	build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
The Process of Design: Each 'Build' and 'Sew' unit follows a structure which allows the children to investigate, make, design and evaluate a product.	 critique, evaluate and test their ideas and products and the work of others
Cooking and Nutrition: Each year group makes two recipes developing their culinary skills and applying principles of nutrition when they cook.	 understand and apply the principles of nutrition and learn how to cook

Topic Map (I st Design Week	/2 nd Design Week)
	0	0



Design Technology Skills Progression Map

KSI	LKS2	UKS2
KSI Design and Technology National Curriculum 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. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment]. Children design purposeful, functional, appealing products for themselves and other users based on design criteria. They generate, develop, model and communicate their ideas through talking, drawing, templates, mock- ups and, where appropriate, information and communication technology. Children can: a use their knowledge of existing products and their own	 KS2 Design and Technology National Curriculum Children understand and apply the principles of a healthy and varied diet. They prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. They understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. Children can: a start to know when, where and how food is grown (such as herbs, tomatoes and strawberries) in the UK, Europe and the wider world; b understand how to prepare and cook a variety of predominantly savoury dishes safely and hygienically; c with support, use a heat source to cook ingredients showing awareness of the need to control the temperature of the hob and/or oven; 	 UKS2 KS2 Design and Technology National Curriculum 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. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment]. Children 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. They generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design. Children can: use research to inform and develop detailed design criteria to inform and develop detailed design criteria to inform and develop detailed design criteria to inform the design of

 experience to help generate their ideas; b design products that have a purpose and are aimed at an intended user; c explain how their products will look and work through talking and simple annotated drawings; d design models using simple computing software; e plan and test ideas using templates and mock-ups; f understand and follow simple design criteria; g work in a range of relevant contexts, for example imaginary, story-based, home, school and the wider environment. 	 d use a range of techniques such as mashing, whisking, crushing, grating, cutting, kneading and baking; e explain that a healthy diet is made up of a variety and balance of different food and drink, as represented in the Eatwell Guide and be able to apply these principles when planning and cooking dishes; f when designing, explore different initial ideas before coming up with a final design; g when planning, start to explain their choice of materials and components including function and aesthetics; h test ideas out through using prototypes; i use computer-aided design to develop and communicate their ideas (see note on p. 1); j develop and follow simple design criteria; k work in a broader range of relevant contexts, for example entertainment, the home, school, leisure, food industry and the wider environment. 	 innovative, functional and appealing products that are fit for purpose and aimed at a target market; b use their knowledge of a broad range of existing products to help generate their ideas; c design products that have a clear purpose and indicate the design features of their products that will appeal to the intended user; d explain how particular parts of their products work; e use annotated sketches, crosssectional drawings and exploded diagrams (possibly including computer-aided design) to develop and communicate their ideas; f generate a range of design ideas and clearly communicate final designs; g consider the availability and costings of resources when planning out designs; h work in a broad range of relevant contexts, for example conservation, the home, school, leisure, culture, enterprise, industry and the wider environment.
---	---	--

	KSI	LKS2 U					
	KSI Design and Technology National	KS2 Design and Technology National	KS2 Design and Technology National				
	Curriculum	Curriculum	Curriculum				
	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 making.	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 making.	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 making.				
Make	 Children select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]. They select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. Children can: Planning a. with support, follow a simple plan or recipe; b. begin to select from a range of hand tools and equipment, such as scissors, graters, zesters, safe knives, juicer; c. select from a range of materials, textiles and components according to their characteristics. 	Children select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] accurately. They 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. Children can: Planning a with growing confidence, carefully select from a range of tools and equipment, explaining their choices; b select from a range of materials and components according to their functional	Children select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. They 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. Children can: Planning a independently plan by suggesting what to do next; b with growing confidence, select from a wide range of tools and equipment, explaining their choices; c select from a range of materials and components according to				
	11						

Make

Practical skills and techniques

- d. learn to use hand tools and kitchen equipment safely and appropriately and learn to follow hygiene procedures;
- e. use a range of materials and components, including textiles and food ingredients;
- f. with help, measure and mark out;
- g. cut, shape and score materials
 with some accuracy;
- h. assemble, join and combine materials, components or ingredients;
- demonstrate how to cut, shape and join fabric to make a simple product;
- manipulate fabrics in simple ways to create the desired effect;
- k. use a basic running stich;
- cut, peel and grate ingredients, including measuring and weighing ingredients using measuring cups;
- m. begin to use simple finishing techniques to improve the appearance of their product, such as adding simple decorations.

properties and aesthetic qualities;

- c place the main stages of making in a systematic order;
 Practical skills and techniques
- d learn to use a range of tools and equipment safely, appropriately and accurately and learn to follow hygiene procedures;
- use a wider range of materials and components, including construction materials and kits, textiles and mechanical and electrical components;
- f with growing independence, measure and mark out to the nearest cm and millimetre;
- g cut, shape and score materials with some degree of accuracy;
- h assemble, join and combine material and components with some degree of accuracy;
- i demonstrate how to measure, cut, shape and join fabric with some accuracy to make a simple product;
- join textiles with an
 appropriate sewing technique;
 k begin to select and use
 different and appropriate
 finishing techniques to

their functional properties and aesthetic qualities;

- d create step-by-step plans as a guide to making; <u>Practical skills and techniques</u>
- *e* learn to use a range of tools and
 equipment safely and appropriately and learn to follow hygiene procedures;
- f independently take exact measurements and mark out, to within | millimetre;
- **g** use a full range of materials and components, including construction materials and kits, textiles, and mechanical components;
- h cut a range of materials with
 precision and accuracy;
- shape and score materials with precision and accuracy;
- i assemble, join and combine materials and components with accuracy;
- k demonstrate how to measure, make a seam allowance, tape, pin, cut, shape and join fabric with precision to make a more complex product;

improve the appearance of a product such as hemming, tie- dye, fabric paints and digital graphics.	 join textiles using a greater variety of stitches, such as backstitch, whip stitch, blanket stitch; m refine the finish using techniques to improve the appearance of their product, such as sanding or a more precise scissor cut after roughly cutting out a shape.
---	--

KSI	LKS2	UKS2
Through a variety of creative and	Through a variety of creative and	Through a variety of creative and
practical activities, pupils should	practical activities, pupils should	practical activities, pupils should
be taught the knowledge,	be taught the knowledge,	be taught the knowledge,
understanding and skills needed to	understanding and skills needed to	understanding and skills needed to
engage in an iterative process of	engage in an iterative process of	engage in an iterative process of
designing and making.	designing and making.	designing and making.
Children explore and evaluate a range of existing products. They evaluate their ideas and products against design criteria. Children can:	Children investigate and analyse a range of existing products. They evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.	Children investigate and analyse a range of existing products. They evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.
 a. explore and evaluate existing products mainly through discussions, comparisons and simple written evaluations; b. explain positives and things to imposure for existing products; 	They understand how key events and individuals in design and technology have helped shape the world.	They understand how key events and individuals in design and technology have helped shape the world.
improve for existing products;	Children can:	Children can:

Evaluate

c. explore what materials products	a.	explore and evaluate existing	a.	complete detailed competitor
are made from;		products, explaining the purpose		analysis of other products on the
d. talk about their design ideas and	ł	of the product and whether it is		market;
what they are making;	ł	designed well to meet the	b.	critically evaluate the quality of
e. as they work, start to identify	ł	intended purpose;		design, manufacture and fitness
strengths and possible changes	b.	explore what		for purpose of products as they
they might make to refine their	ł	materials/ingredients products		design and make;
existing design;		are made from and suggest	c.	evaluate their ideas and products
f. evaluate their products and ideas	ł	reasons for this;		against the original design
against their simple design	<i>с</i> .	consider their design criteria as		criteria, making changes as
criteria;		they make progress and are		needed.
g. start to understand that the		willing to alter their plans,		
iterative process sometimes		sometimes considering the views		
involves repeating different		of others if this helps them to		
stages of the process.		improve their product;		
	d.	evaluate their product against		
		their original design criteria;		
	e.	evaluate the key events, including		
		technological developments, and		
		designs of individuals in design		
		and technology that have helped		
		shape the world.		

8	KSI	LKS2	UKS2
ولم	Children build structures, exploring	Children apply their understanding	Children apply their understanding
رعا	how they can be made stronger,	of how to strengthen, stiffen and	of how to strengthen, stiffen and
× b	stiffer and more stable.	reinforce more complex structures.	reinforce more complex structures.
Къ.			
T	They explore and use mechanisms	They understand and use mechanical	They understand and use mechanical
hnica	[for example, levers, sliders, wheels	systems in their products [for	systems in their products [for
	and axles], in their products.	example, gears, pulleys, cams, levers	example, gears, pulleys, cams, levers
e c		and linkages].	and linkages].
F-	Children can:		

a.	build simple structures,	Th	ey understand and use electrical	Th.	ey understand and use electrical
	exploring how they can be made	љу	stems in their products [for	љу	stems in their products [for
	stronger, stiffer and more stable;	ex	ample, series circuits	eх	ample, series circuits
b.	talk about and start to	in	corporating switches, bulbs,	in	corporating switches, bulbs,
	understand the simple working	bu	zzers and motors].	bu	zzers and motors].
	characteristics of materials and				
	components;	Th	ey apply their understanding of	Th	ey apply their understanding of
c.	explore and create products	co	mputing to program, monitor and	co	mputing to program, monitor and
	using mechanisms, such as	c۵	ntrol their products.	co	ntrol their products.
	levers, sliders and wheels				
		Ch	ildren can:	Ch.	ildren can:
		a.	understand that materials have	a.	apply their understanding of how
			both functional properties and		to strengthen, stiffen and
			aesthetic qualities;		reinforce more complex
		b.	apply their understanding of how		structures in order to create more
			to strengthen, stiffen and		useful characteristics of
			reinforce more complex		products;
			structures in order to create more	b.	understand and demonstrate that
			useful characteristics of		mechanical and electrical
			products;		systems have an input, process
		c.	understand and demonstrate how		and output;
			mechanical and electrical	c.	explain how mechanical systems,
			systems have an input and output		such as cams, create movement
			process;		and use mechanical systems in
		d.	make and represent simple		their products;
			electrical circuits, such as a	d.	apply their understanding of
			series and parallel, and		computing to program, monitor
			components to create functional		and control a product.
			products;		
		e.	explain how mechanical systems		
			such as levers and linkages		
			create movement;		
		f.	use mechanical systems in their		
			products		

	LKS2	UKS2
Children use the basic principles of a healthy and varied diet to prepare dishes.	diet.	Children understand and apply the principles of a healthy and varied diet.
They understand where food comes from. Children can:	They prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.	They prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.
 a. explain where in the world different foods originate from b. understand that all food comes from plants or animals; c. understand that food has to be farmed, grown elsewhere (e.g. home) or caught; d. name and sort foods into the five groups in the Eatwell Guide; e. understand that everyone should eat at least five portions of frui. and vegetables every day and start to explain why; f. use what they know about the Eatwell Guide to design and prepare dishes. 		 They understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. Children can: a. know, explain and give examples of food that is grown (such as pears, wheat and potatoes), reared (such as poultry and cattle) and caught (such as fish) in the UK, Europe and the wider world; b. understand about seasonality, how this may affect the food availability and plan recipes according to seasonality; c. understand that food is processed into ingredients that can be eaten or used in cooking; d. demonstrate how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where

e. explain that a healthy diet is		appropriate, the use of a heat
made up of a variety and balance		source;
of different food and drink, as	e.	demonstrate how to use a range
represented in the Eatwell Guide		of cooking techniques, such as
and be able to apply these		griddling, grilling, frying and
principles when planning and		boiling;
cooking dishes;	f.	explain that foods contain
f. understand that to be active and		different substances, such as
healthy, nutritious food and		protein, that are needed for
drink are needed to provide		health and be able to apply these
energy for the body;		principles when planning and
g. prepare ingredients using		preparing dishes;
appropriate cooking utensils;	g.	adapt and refine recipes by
h. measure and weigh ingredients		adding or substituting one or
to the nearest gram and millilitre;		more ingredients to change the
i. start to independently follow a		appearance, taste, texture and
recipe;		aroma;
j. start to understand seasonality	h.	alter methods, cooking times
		and/or temperatures;
	i.	measure accurately and calculate
		ratios of ingredients to scale up
		or down from a recipe;
	j.	independently follow a recipe

Planning, marking and feedback

DT plans are completed by class teachers following the school format in the topic planners. Planning should identify objectives, resources, success criteria (WILFs), Captain Stretch activity, key vocabulary, key questions and use of adults.

Work is evidenced using the 'Design Task Booklet' for each project completed and recorded on SeeSaw. The 'Design Task Booklet' can be found in the DT subject folder on the server.

Marking and Feedback should be within the task booklets and verbally during lessons.

Expectations				
Design Task Booklet	Dojo			
 Booklet per child to support the DT process completed. This booklet is to the filed in each child's red slip wallet and passed up each year to create a portfolio of DT work. 	• For an outcome that cannot be sent home I.E cook			

<u>Assessment</u>

In DT, a range of formative assessment strategies are used in lessons. Clear objectives and success criteria should be shared with children and they are assessed against these. Tasks should be well matched to learning objectives and success criteria. Attainment is recorded as **working below age related**, at age **related** or **above age related** expectations.

Judgements about pupil attainment are formed from:

- Teacher observations
- Contributions to class discussions
- Work in Design Task Booklets, final pieces of DT projects and on SeeSaw

Children's attainment is reported twice yearly to parents via their reports.

Impact

What are the standards and progress in your subject?

Children across the school have strong connections to computing equipment across the school.

Children speak to adults and parents about anything they have concerns about when using equipment online.

Children are confident in problem solving using computing equipment.

Computing is used across the school for many different lessons and children are confident in using many different apps and programmes to enhance their learning,

Date:

% at expected and above	% above expected

Examples of work are provided that show progress during the year and across the school.

Appendix 1 – PKC Overview

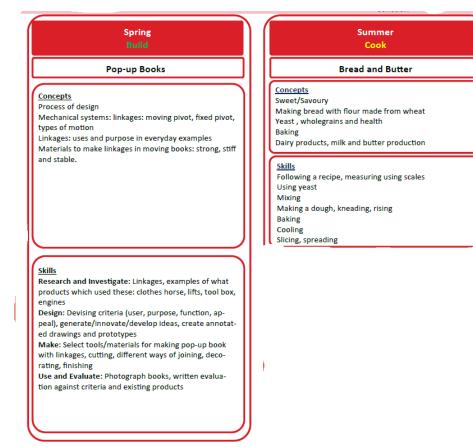
Year 1

Autumn Cook	Summer Build
Dips and Vegetables	Vehicles
Concepts Nutrition—vegetables Sweet v savoury Cooked v raw Cooking from different cultures—Greece	Concepts Process of design Vehicles: user and purpose Mechanical systems: wheels and axles Wheels and axles in everyday examples Structures and materials—strong, stiff and stable. Materials—properties and functionality
Skills Following a simple recipe Measuring in spoonfuls Cutting, chopping Using a knife and a chopping board Bridge and claw technique Cutting with scissors Mashing, mixing	Vehicles and pollution
	Skills Research and Investigate: Different types of vehicles, different parts of a vehicle, explore wheels and axles in toy cars Design: Understand criteria (user, purpose, function, ap peal), generate/innovate/develop ideas, talking, drawin labelling Make: Select tools/materials for making a toy vehicle with wheels and axles, cutting, different ways of joining decorating, finishing Use and Evaluate Car racing in the playground exploring speed, film/photograph children doing this, evaluation against criteria and existing products

Year 2

Spring Sew	Summer Build
Pencil Cases	Moving Pictures
Concepts Process of design Features of a pencil case—size, materials, fastenings, shape, joining, decoration Using suitable materials Properties of different materials Making products with fabric Join fabric together—sewing and gluing Creating stiches with a needle and thread	Concepts Process of design Mechanical systems: levers and sliders Levers and sliders in everyday examples Structures and materials to make levers and sliders in moving pictures strong, stiff and stable.
Skills Research and Investigate: Existing products Design: Understand criteria (user, purpose, function, appeal), generate/develop ideas, talking, drawing, label- ling Make: Select tools/materials, making paper templates/ patterns, drawing/cutting shapes, threading a needle, tying a knot, running stitch, sewing on a button, gluing on decoration Use and Evaluate: Photograph pencil cases, written evaluation against criteria	Skills Research and Investigate: Levers and sliders, examples of what products which used these: see saw, scissors, hammer, wheelbarrow, shaduf, research examples of moving pictures Design: Understand criteria (user, purpose, function, appeal), generate/innovate/develop ideas, talking, drawing labelling, creating a mock up Make: Select tools/materials for making a moving picture with levers and sliders, cutting, different ways of joining decorating, finishing Use and Evaluate: Photograph pictures, evaluation against criteria and existing products

Year 3



Year 4

Autumn Cushions Concepts Concepts Process of design Process of design Making products with fabric Types of fabric - natural/synthetic Properties of fabric-thickness, softness, stretchiness Features of a cushion - size, materials, shape, joining, decoration Decoration—appliqué Skills Skills Research and Investigate: Appliqué, cushions, running stitch, backstitch, overcast stitch (whipstitch) Design: Devising criteria (user, purpose, function, appeal) generate/innovate/develop ideas, annotated drawings Make: Select tools/materials, making paper templates/ patterns, drawing/cutting shapes, pinning, threading a needle, tying a knot, running stitch, backstitch, overcast stitch (whipstitch), appliqué, stuffing Use and Evaluate: Photograph, written evaluation, peer ways of joining, decorating, finishing evaluation—against criteria and existing products

Spring

Moving Miniature Playgrounds

Mechanical systems: gears, teeth, interlock, motion transfer, drive gear, driven gear, gearing up, gearing down Gears: user and purpose in everyday examples Structures and materials to make a product with gears -

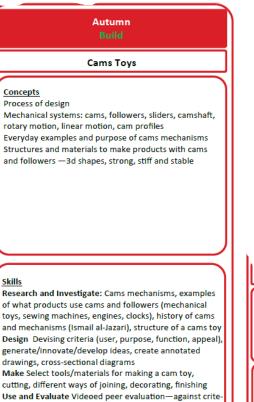
3d shapes, strong, stiff and stable.

Electrical systems: circuits, batteries, bulbs and buzzers

Research and Investigate: Gears; examples of products which used these: tin openers, bicycles, how gears on a bicycle work, history of gears, ancient Greek Antikythera mechanism (used to predict astronomical positions) Design: Devising criteria (user, purpose, function, appeal), generate/innovate/develop ideas, create annotated drawings and exploded diagrams Make: Select tools/materials for making a moving toy with gears and an electrical circuit, cutting, different

Use and Evaluate: Written evaluation against criteria

Year 5



ria and existing products

Honey production and history Health benefits of honey

Honey Cake

Cooking from different cultures Baking Skills Following a recipe, measuring using scales Mixing Cracking an egg Beating

Pouring

Concepts

Sweet/Savoury

Sprinkling Baking, cooling

Year 6

Concepts Process of design

Mechanisms: pulleys, Archimedes' screw

Everyday examples and purpose of pulleys, purpose of Archimedes' screw

Structures and materials to make products with pulleys in everyday examples—3d shapes, strong, stiff and stable Plastics pollution/recycling/reuse

Autumn

Water Walls

Use of electricity and connection to global warming Engineering systems to create environmentally friendly solutions-Nav Sawhney and the Washing Machine Pro-

ject. Appropriate use of materials

Skills

Research and Investigate: Investigate water wall and pulleys

Design: Devising criteria (user, purpose, function, appeal), generate/innovate/develop ideas, create annotated drawings and prototypes

Make: Select tools/materials for making a water wall for Reception with recycled objects, cutting, tying knots, sticking, making holes

Use and Evaluate: Evaluation with user (Reception)against criteria and existing products

Summer

Upcycling Fashion

Concepts

Process of design Fast fashion and globalisation

- Waste and pollution
- Upcycling, recycling, sustainability
 - Processes for making clothes—seams and hems
- Decoration—appliqué, embroidery, buttons, gluing

Skills

Research and Investigate: Fast fashion, upcycling, recycling, sustainability Design: Devising criteria (user, purpose, function, ap-

peal), generate/innovate/develop ideas, annotated drawings, pattern pieces

Make: Experimentation with upcycling existing garments, select tools/materials, drawing/cutting shapes, creating pattern pieces, pinning, threading a needle, tying a knot, joining, appliqué, embroidery, running

stitch, backstitch, overcast stitch, plaiting, attaching a button Use and Evaluate: Written evaluation, photograph.

evaluation—against criteria and existing products, film fashion show

Appendix 2 – Resource lists	
Year 1—Dips and Vegetables	Year 1—Dips and Vegetables
<u>Equipment</u> For 30 children:	<u>Ingredients</u> For 30 children:
Each child to take home dips and vegetables in a small sealable plastic tub. 30 aprons	<u>Bean Dip/Tzatziki/Vegetable Sticks</u> 8 400g tins of Cannellini beans (1/2 tin per pair) 1/2 litre bottle of olive oil 15 lemons
15 medium mixing bowls 15 teaspoons 15 tablespoons 15 forks 15 wooden spoons 15 small knives for cutting vegetables (safe knives for children, with plastic blades, are available. For example see <u>children's knives</u>) 8 lamon squeezers	A bunch of chives 3kg plain yoghurt 15 cucumbers 3 heads of celery Small pot of dried dill Small pot of salt Pepper in a pepper grinder
8 lemon squeezers 15 small chopping boards 15 small pairs of scissors	Allergies/Dietary Needs Yoghurt: is a dairy product. There are vegan alternatives made from ingredients such as soy and oats. Please note that suggested alternatives ingredi- ents to meet allergy/dietary needs are sugges- tions only and teachers are responsible for checking whether the pupils in their class can handle/consume these products.
	Risk Assessment Possible risk assessment alerts Allergies: see above Sharp edges: knives Please note that schools are responsible for completing all appropriate risk assessments. See <u>CLEAPSS</u> for risk assessment advice and profor-

23

mas.

Year 1—Vehicles

Quantities specified per child

• Small carboard box, which should measure less than 130mm wide (these can be collected from parents or see if you wish to purchase see <u>cardboard boxes to buy</u>: these are a good size measuring H: 127 mm, L:216 mm W: 127 mm)

- 4 wooden wheels (e.g. 34mm diameter with central hole of 5mm—see wheels)
- 2 lengths of dowl approx. 150mm long (this can be wooden or paper dowel and needs to fit the the hole in the wheels tightly without gluing, and be a little longer than the width of the cardboard box to—see <u>paper dowl</u> or <u>wooden dowl</u>. Note dowl will need to be cut in advance by teachers to the correct length)
- 2 straws at least 6mm in diameter and 150mm long (to allow dowl to move freely once inserted inside the straw)
- Piece of thick card to reinforce the bottom of the box—measuring e.g. 127mmx216mm
- Scissors
- White copy paper
- Pencil
- Extra coloured cardboard/straws/plastic bottle tops for decoration

To share, one between two children

- Glue stick
- PVA glue and glue spreader
- Masking tape
- Colouring pencils/felt tip pens

Risk Assessment

Possible risk assessment alerts Sharp edges: scissors Please note that schools are responsible for completing all appropriate risk assessments. See <u>CLEAPSS</u> for risk assessment advice and proformas.

Year 2—Pencil Cases

Quantities specified per child

- 30cm2 tracing paper/greaseproof paper
- Soft pencil (e.g. 2b) for marking on paper
- Biro for marking on felt
- Scissors for cutting fabric/thread
- Ruler
- 2 pieces of felt roughly 30cm x 20cm in two different colours
- Scraps of felt for decoration
- Scrap piece of material for practice
- Thick cotton/wool in different colours
- Large needle (make sure these are sharp enough to go through 2 layers of felt)
- Pins (N.B. a magnetic pin cushion for each class is very useful)
- Length of ribbon, suggested at least 20cm length per child
- Fabric glue

Risk Assessment

Possible risk assessment alerts

Sharp edges: cutting fabric/needles/pins

Please note that schools are responsible for completing all appropriate risk assessments. See <u>CLEAPSS</u> for risk assessment advice and proformas.

Year 2—Moving Pictures

Quantities specified per child

- Several sheets of brightly coloured thin card—supply a range of choice
- Scissors
- Pencil
- Ruler
- Glue stick
- Masking tape
- Small piece of Blu Tack
- 2 split pins
- Colouring pencils/felt tip pens

Risk Assessment

Possible risk assessment alerts

Sharp edges: scissors/split pins

Please note that schools are responsible for completing all appropriate risk assessments. See <u>CLEAPSS</u> for risk assessment advice and proformas.

Year 3—Bread and Butter

Equipment

For 30 children working in groups of 3.

Each child to take home a portion of the loaf and butter in a small sealable plastic tub and bag.

30 aprons

Bread

10 sets of measuring scales (for example see scales—these should have a measurements in grams and provide a scale which is easy to read). 10 plastic measuring jugs 10 large mixing bowls 10 teaspoons 10 tablespoons 10 wooden spoons 10 wooden spoons 10 goog loaf tins 10 clean plastic bags 5 cooling racks (each group will share with another group)

Butter

15 knives used for spreading butter (used in evaluation) 5 500ml plastic jars with lids (see e.g. jars)

Year 3—Bread and Butter

Ingredients

For 30 children working in groups of 3.

<u>Bread</u> Work in groups of 3. This recipe makes a loaf of wholemeal bread.

Ingredients

250ml warm tap water per group 10x 7g sachets fast-action dried yeast 6kg strong wholemeal bread flour (this provides enough for kneading and dusting) Small container of table salt (providing 10 teaspoonfuls) 500 ml bottle of olive oil 340g pot of clear honey

Butter 3x 300ml pots whipping cream

Allergies/Dietary Needs

Bread flour: contains gluten. There are gluten free substitutes for bread flour.

Cream/Butter: is a dairy product. There are vegan alternatives to butter such as some margarines which children can use to spread on their bread in the evaluation session.

Please note that suggested alternatives ingredients to meet allergy/dietary needs are *suggestions only* and teachers are responsible for checking whether the pupils in their class can handle/consume these products.

<u>Risk Assessment</u> Possible risk assessment alerts Allergies: see above Oven use: teachers should have sole responsibility for oven use with children at this age Please note that schools are responsible for completing all appropriate risk assessments. See <u>CLEAPSS</u> and <u>The</u>

y for risk assessment advice and proformas.

Year 3—Pop-Up Books

For the whole class

1 long arm stapler

For each child

- •4 pieces of thin A4 card
- •4 piece of thin A5 card
- Brightly coloured card for the mechanisms
- Scissors
- Pencil
- Ruler
- Glue stick
- Masking tape
- Small piece of Blu Tack

Split pins (between 10-15 for each child, the number required will depend on their design)

Colouring pencils/felt tip pens

Risk Assessment

Possible risk assessment alerts

Sharp edges: Scissors and split pins

Please note that schools are responsible for completing all appropriate risk assessments. See <u>CLEAPSS</u> for risk assessment advice and proformas.

27 in

Year 4—Moving Miniature Playgrounds

For each child

For the structure and gears

Plastic gears of varying sizes e.g. <u>plastic gears</u> or <u>plastic gears 2</u> (approx. 5 per child)

Split pins (approx. 5 per child)

Cardboard from a cardboard box—approx. 30cmx30cm

Cardboard box card for supporting corners
 Scissors

Pencil

Pencil

For the whole class

For the playground features: a selection of the following

Plastic bottles/bottle lids

Cardboard box card for features

Selection of thin coloured card

Cotton wool

Lollipop sticks

String

Straws

For decoration

Colouring pencils/felt tip pens

Paints, paint brushes, water pots

For sticking- a selection of:

Masking tape, PVA glue, Blu tack

•Optional: Hot glue gun and replacement glue sticks (suggest one between three children N.B. you will need to be able to plug each glue gun in so that three children can take turns in using it)

•Optional: Glue gun stand (this provides an easy and safe place for the glue gun to sit while it is not being used—for example see glue gun stand)

To make a circuit (Note these resources are used in PKC science electricity units in year 2, 4 and 6—suggest one circuit set between each pair of children) •Wires, batteries, bulbs, switches, motors and buzzers

Kits containing these items are available: see electrical circuit kit

Risk Assessment

Possible risk assessment alerts Sharp edges: Scissors and split pins Hot materials: Hot glue gun Electrical charge: Electrical circuits Please note that schools are responsible for completing all appropriate risk assessments. See <u>CLEAPSS</u> for risk assessment advice and proformas.

Year 4—Cushions

Quantities specified per child

- 30cm2 tracing paper/greaseproof paper
- Chalk for marking on fabric
- Soft pencil (e.g. 2b) for marking on paper
- Ruler
- Scissors for cutting fabric/cotton thread
- 2 pieces of felt— to make two squares roughly 20cm2 in one or two different colours
- Extra felt in variety of colours for applique shapes
- Thick cotton thread in varying colours
- Pins (N.B. a magnetic pin cushion for each class is very useful)
- Large needle
- Stuffing for pillow roughly 20cm2

<u>Risk Assessment</u> Possible risk assessment alerts Sharp edges: needles/pins Please note that schools are responsible for completing all appropriate risk assessments. See <u>CLEAPSS</u> for risk assessment advice and proformas.

Year 5—Cams Toys

For each child

- Two kebab sticks with pointed ends (approx. 25 cm long)
- Drinking straw
- Scissors
- Hot glue gun and replacement glue sticks (suggest one between three children N.B. you will need to be able to plug each glue gun in so that three children can take turns in using it)
- Glue gun stand (this provides an easy and safe place for the glue gun to sit while it is not being used—for example see <u>glue gun stand</u>)
- Small ball of blue tack
- Roll of masking tape (one between three children)
- Sheet of thick cardboard (cardboard box type card) roughly 65cmx15cm. NB children need to be able to cut this.
- Off-cuts of thick cardboard
- X2 A4 thin card for creating shapes at the top of the toy
- Split pin
- Pencil
- Ruler
- Felt tip pens for decoration

<u>Risk Assessment</u> Possible risk assessment alerts Sharp edges: kebab sticks Hot materials: Hot glue guns Please note that schools are responsible for completing all appropriate risk assessments. See <u>CLEAPSS</u> for risk assessment advice and proformas.

Year 5—Honey Cake

Equipment

For 30 children working in groups of 3. Each group will make one cake (i.e. 10 cakes per class of 30).

Each child to take home a piece of cake which is not used in PTA/Governors lunch in a small sealable plastic tub.

30 aprons

Honey Cake

1 large saucepan for teacher to melt butter and ingredients for topping in 10 sets of measuring scales (for example see scales—these should have a measurements in grams and provide a scale which is easy to read). 10 small bowls to crack eggs into 20 small bowls for weighing quantities of sugar and flour 10 large mixing bowls 10 hand-held balloon whisks 10 teaspoons 10 wooden spoons 10 circular cake tins, roughly 20cm in diameter Roll of kitchen roll Roll of greaseproof paper 10 pairs of scissors 10 pencils 5 cooling racks (2 cakes can be put on each rack)

Year 5—Honey Cake

Ingredients

For 30 children working in groups of 3. Each group will make one cake (i.e. 10 cakes per class of 30).

Honey Cake

For the cake 800g melted butter 500g caster sugar Small bottle of vanilla extract 36 eggs (this leaves 6 spare eggs in case of breakages) 1kg of plain flour Small pot of baking powder 250g packet of soft butter for greasing

For the topping

200g runny honey 300g butter 1 small pot of ground cinnamon

Allergies/Dietary Needs

Plain flour: contains gluten. There are gluten free substitutes such as rice flour. Butter: is a dairy product. There are vegan alternatives such as some margarines. Egg: Egg is an integral part of this recipe. Egg substitutes for baking can be used. For ideas see <u>BBC Good Food</u>

and for products to buy see products.

Please note that suggested alternatives ingredients to meet allergy/dietary needs are *suggestions only* and teachers are responsible for checking whether the pupils in their class can handle/consume these products.

Risk Assessment

Possible risk assessment alerts Allergies: see above Melted butter: Teachers should ensure that the melted butter is cool before the children pour it. Oven use: teachers should have sole responsibility for oven use with children of this age.

Please note that schools are responsible for completing all appropriate risk assessments. See <u>CLEAPSS</u> and <u>The</u> <u>Key</u> for risk assessment advice and proformas.

Year 6—Water Walls

Half the class to make an Archimedes screw and half the class to make a pulley. Children to work in pairs

For Archimedes Screws (Resources per pair—in a class of 30 this might be 8 pairs)

- PVC tubing roughly 30cm long and 4cm in diameter (for example see <u>PVC tubing</u>) (NB teacher will need to cut this into the right lengths with a small hacksaw)
- Roll of waterproof duct table
- 1 metre transparent flexible plastic tubing at least 1.3cm in diameter (for example see <u>plastic</u> <u>tubing</u>)
- Scissors
- A number of plastic tubs to hold water at each end of the screw to test it (suggest 8 containers per class)

For the Pulleys (Resources per pair-in a class of 30 this might be 8 pairs)

- Small water bottle (with lid)
- 2m piece of string
- Chopstick/kebab stick/wooden sticks approx. 25cm long
- A4 piece of medium weight card
- Glue stick
- Lump of Blu tack
- Sharp pencil or biro for making holes in plastic lid

For the Water Wall (resources for the whole class)

- Flexible plastic mesh approx. 5m x 0.5m (for example see plastic mesh)
- 100 large cable ties—about 30cm in length
- Strong string
- Plastic bottles/containers collected by the pupils —about 3 per pupil
- Scissors
- Additional transparent flexible plastic tubing (optional—see resources for Archimedes screw above)
- Sharp pencil or biro for making holes in plastic containers

Risk Assessment

Possible risk assessment alerts

harp edges: Kebab sticks/cutting plastic with scissors

Please note that schools are responsible for completing all appropriate risk assessments. See <u>CLEAPSS</u> for risk assessment advice and proformas.

Year 6—Up-Cycling Fashion

Quantities specified per class of 30

- 15 old t-shirts/shirts (one between each pair of children)
- Large needles, e.g. embroidery needle (one for each child)
- Masking tape
- Fabric glue
- White or coloured chalk for marking on fabric
- Soft pencils (e.g. 2b) for marking on paper
- Greaseproof paper/tracing paper
- Rulers
- Scissors for cutting fabric/cotton thread
- Scraps of fabric in a variety of colours/patterns
- Thick cotton thread in varying colours (such as <u>thick cotton thread</u>)
- Thin wool in varying colours
- Pins —(N.B. a magnetic pin cushion for each class is very useful)
- Small safety pins
- Items for decoration such as:
- newspaper/magazine paper
- assorted ribbon
- iute ribbon
- mixed beads
- buttons
- brightly colour lengths of yarn
- I plastic items such as straws and bottle tops
- scraps of fabric.

Risk Assessment

Possible risk assessment alerts

Sharp edges: scissors/needles/pins

Please note that schools are responsible for completing all appropriate risk assessments. See <u>CLEAPSS</u> for risk assessment advice and proformas.