

# Substantive and disciplinary knowledge D&T curriculum Springfield Academy

## Mechanisms

EYFS	KS1 Cycle A	KS1 Cycle B	LKS2 Cycle A	LKS2 Cycle B	UKS2 Cycle A	UKS2 Cycle B
<p>Sliding mechanisms in pop up books.</p> <p>Wheels on vehicles, Mechanics station in the environment</p>	<p>I know that sliders and levers are mechanisms that make things move.</p> <p>I know that levers use a fulcrum (a fixed point around which the lever can pivot) to make things move in an arc (curve).</p>	<p>I know that a wheel is a circular object that spins below a vehicle to make it move.</p> <p><b>I know that an axle is a rod which holds wheels together under a vehicle.</b></p>	<p>I know that pneumatic systems can be used as part of a mechanism.</p> <p><b>I know that pneumatic systems operate by drawing in, releasing and compressing air.</b></p>		<p>I know that levers and axles allow some rides to work.</p> <p>I can name famous fairground ride designers such as Walt Disney Imagineering, Universal Creative and John Wardley (Alton Towers).</p>	<p>I know how cams can be used to make a model move.</p> <p><b>I know how changing the shape of the cam changes the movement of the follower.</b></p>

# Substantive and disciplinary knowledge D&T curriculum Springfield Academy

## Mechanisms (design, make and evaluate)

EYFS	KS1 Cycle A	KS1 Cycle B	LKS2 Cycle A	LKS2 Cycle B	UKS2 Cycle A	UKS2 Cycle B
<p>Exposed to pop up books in the reading corner.</p> <p>Says what they are going to make before doing so and what it will look like.</p> <p>Creates objects for a given purpose (for play or given functionality).</p> <p>Explains to an adult what they have created and what it is for. Building blocks Stage 5: Symmetry and Patterns.</p>	<p><b>I can identify whether a mechanism is a side-to-side slider or an up-and-down slider and determine what movement the mechanism will make.</b></p> <p>I can label drawings to show which parts of my design will move and in which direction.</p> <p>I can make a picture that meets the design criteria, with parts that move purposefully as planned.</p>	<p><b>I can generate initial ideas by investigating a variety of toy cars.</b></p> <p>I can communicate my design ideas through talk and drawings.</p> <p>I can evaluate my design by discussing how well it works (thinking back to the purpose and whether it meets the design criteria).</p>	<p>I can make prototypes by creating a variety of levers using card and split pins.</p> <p>I can identify the end user I will design my product for.</p> <p>I can use a labelled drawing to communicate my design ideas.</p> <p>I can use my design specification to evaluate my product considering the design,</p>	<p><b>Microbits planning</b> To create a program to run on a controllable device I can apply my knowledge of programming to a new environment I can test my program on an emulator I can transfer my program to a controllable device.</p>	<p><b>I understand how pulleys can be used to speed up or slow down movement.</b></p> <p>I can formulate step-by-step plans to support the making process.</p> <p>I can select from and use a range of tools and equipment to make products that are accurately assembled and well finished.</p> <p>I can evaluate my finished product.</p>	<p>I can investigate manufacturing and engineering products that use cams.</p> <p>I can use research and develop design criteria to inform the design of innovative, functional, appealing products.</p> <p>I can generate, develop, model and communicate my ideas through discussion, annotated sketches, cross-sectional and exploded</p>

# Substantive and disciplinary knowledge D&T curriculum Springfield Academy

<p>Pieces are selected due to their size and shape to add symmetry and pattern.</p> <p>Shows signs of creativity, as they add accessories to their structures. Whether it is vehicles, dolls, furniture, animals, or 'loose parts' like scarves, rocks, or gems, it adds to the building dynamics.</p> <p>Cuts around circles, squares and images, confidently changing cutting directions and the angle of hold.</p> <p>Uses small construction materials that join</p>	<p>I can evaluate the strengths and weaknesses of my design and suggest alterations.</p>		<p>functionality and aesthetics.</p> <p><b>I can use syringes and balloons to create different types of pneumatic systems.</b></p> <p>I can use the views of others to improve my designs.</p>			<p>diagrams, prototypes and pattern pieces.</p> <p>I can select and use appropriate cams, tools, materials, components and techniques.</p> <p><b>I can evaluate my work both during and at the end of the project.</b></p> <p>I can consider the views of others to improve my work.</p> <p>I can evaluate my product against my design criteria and how well my design moves.</p>
--	--	--	--	--	--	--



# Substantive and disciplinary knowledge D&T curriculum Springfield Academy

in different ways  
with confidence.

--	--	--	--	--	--	--

# Substantive and disciplinary knowledge D&T curriculum Springfield Academy

## Cooking and nutrition

EYFS	KS1 Cycle A	KS1 Cycle B	LKS2 Cycle A	LKS2 Cycle B	UKS2 Cycle A	UKS2 Cycle B
<p>With encouragement, children will make healthy choices about food, drink, sleep and physical activity. Begins to use cutlery correctly with support.</p> <p>During food tasting opportunities children are exposed to washing, preparing and cutting fruits and vegetables. They then have talking opportunities to discuss the tastes, textures and thoughts on what they have ate.</p>	<p>I can recognise and name at least 5 different fruits and vegetables.</p> <p>I know that some fruit and vegetables grow above the ground and some below.</p> <p>I know it is important to eat at least 5 portions of fruit/vegetables a day.</p>	<p>I can name some countries where different dips come from.</p> <p><b>I know the names of the 5 main food groups.</b></p> <p>I know the jobs the different food groups do.</p> <p>I know that I need to eat a balance of the different food groups to stay healthy.</p> <p>I can sort foods in dips into the 5 food groups.</p> <p><b>I know important rules to follow for food hygiene (washing hands,</b></p>		<p>I can order the main stages of making.</p>	<p>I know where the ingredients used in Mexican cooking come from.</p> <p>I know how the ingredients in the Mexican dishes I cook are grown, reared or processed.</p>	<p>I know that seasonality refers to the times of year when foods, such as fruit and vegetables, are ripe and ready to eat.</p> <p><b>I know where and how a variety of ingredients are grown, reared, caught and processed.</b></p> <p>I know that 'processed food' means food that has been put through multiple changes in a factory.</p> <p>I know how to correctly store</p>



# Substantive and disciplinary knowledge D&T curriculum Springfield Academy

		wiping work surfaces, tying hair back, rolling up sleeves, wearing an apron).				and handle meat and fish.
--	--	---	--	--	--	---------------------------

# Substantive and disciplinary knowledge D&T curriculum Springfield Academy

## Cooking and nutrition (design, make and evaluate)

EYFS	KS1 Cycle A	KS1 Cycle B	LKS2 Cycle A	LKS2 Cycle B	UKS2 Cycle A	UKS2 Cycle B
	<p><b>I can taste salads made from root vegetables, explaining what I like about them and how they could be improved.</b></p> <p>I can prepare and make a healthy salad made from root vegetables.</p> <p>I can follow the food hygiene rules when preparing food.</p> <p><b>I can peel, cut and combine ingredients.</b></p> <p>I can select and safely use a zester and juicer.</p>	<p>I can taste and evaluate different dips and dippers.</p> <p>I can describe the appearance, smell, texture and taste of dips and dippers.</p> <p>I can use simple utensils and equipment to cut, peel, grate and chop safely.</p> <p><b>I can use 'The Bridge', 'The Claw' and 'The Fork Secure' techniques to prepare food safely.</b></p> <p>I can measure using teaspoons and tablespoons.</p>		<p>I can select and use appropriate utensils and equipment to prepare and combine ingredients.</p> <p><b>I can use the cooking skills of mixing, kneading and shaping with increasing confidence.</b></p> <p><b>I can evaluate what is similar and different about Roman bread compared to bread we eat now (comparing the ingredients and the process).</b></p>	<p><b>I can prepare and cook a variety of predominantly savoury dishes safely and hygienically.</b></p> <p>I can use a range of cooking techniques.</p> <p>I can measure accurately and calculate ratios of ingredients to scale up or down from a recipe.</p> <p>I can accurately follow a recipe.</p> <p><b>I can evaluate the dishes I have produced, commenting on the appearance,</b></p>	<p>I can taste and evaluate seasonal foods.</p> <p>I can explain the importance of protein as a proportion of a healthy varied diet.</p> <p>I can select from a range of ingredients, according to their functional properties and aesthetic qualities, to design a seasonal meal.</p> <p>I can work as a group to generate, evaluate and</p>

# Substantive and disciplinary knowledge D&T curriculum Springfield Academy

	<p>I can chop using kitchen scissors and a safe knife.</p>	<p>I can plan my own appealing dip and dipper.</p> <p>I can evaluate my dip and dipper.</p>			<p><b>aroma, taste and texture.</b></p>	<p>refine recipe ideas.</p> <p>I can prepare and cook a healthy seasonal meal using a range of cooking techniques.</p> <p><b>I can say how I would adapt and refine dishes by adding or substituting one of more ingredients to change the appearance, taste, texture and aroma.</b></p>
--	--	---	--	--	---	--

# Substantive and disciplinary knowledge D&T curriculum Springfield Academy

Structures						
EYFS	KS1 Cycle A	KS1 Cycle B	LKS2 Cycle A	LKS2 Cycle B	UKS2 Cycle A	UKS2 Cycle B
	<p>I know that Christopher Wren was one of the architects who designed how to rebuild London after the fire.</p> <p><b>I know that an architect is someone who designs buildings and oversees their construction.</b></p>			<p>I know that a net is a 2D shape, which when scored, folded and glued together, makes a 3D package, box or carton.</p>	<p>I know that the Anderson Shelter was designed by William Peterson and Oscar Carl Kerrison.</p> <p>I know that the Anderson Shelter was named after Sir John Anderson, who was responsible for preparing air raid precautions.</p> <p>I know how the shape of a structure can influence its strength (the arch of the Anderson Shelter).</p>	



# Substantive and disciplinary knowledge D&T curriculum Springfield Academy

# Substantive and disciplinary knowledge D&T curriculum Springfield Academy

Structures (design, make and evaluate)						
EYFS	KS1 Cycle A	KS1 Cycle B	LKS2 Cycle A	LKS2 Cycle B	UKS2 Cycle A	UKS2 Cycle B
<p>Building enclosures, bridges and different structures during block play.</p>	<p>I can explore structures and what they are used for.</p> <p>I can use a range of cutting and shaping techniques.</p> <p>I can explore how to make structures stronger, stiffer and more stable.</p> <p><b>I can use construction kits (wooden blocks, interconnecting plastic bricks etc) to build and explore a variety of freestanding structures.</b></p>			<p>I can evaluate existing packaging and say which I think are most effective.</p> <p>I can take a small package apart, identifying and discussing parts of a net.</p> <p>I can score, cut out and assemble nets.</p> <p><b>I can explore how to stiffen and strengthen my shell structure (folding and shaping, corrugating, ribbing, laminating).</b></p>	<p>I know how my own structure can be strengthened by internal support and exterior reinforcement.</p> <p>I can investigate the construction of existing structures.</p> <p><b>I can create prototype models to investigate stable frameworks.</b></p> <p>I can compare designs and understand the necessary features of a suitable structure (considering</p>	

# Substantive and disciplinary knowledge D&T curriculum Springfield Academy

	<p>I can explore how to make bricks interlock to create a stable structure.</p> <p>I can generate simple design criteria.</p> <p>I can develop my ideas by talking, drawing and making mock-ups of my ideas with construction kits and other materials.</p> <p>I can evaluate my product against the design criteria.</p>			<p>I can identify the purpose and audience for my shell structure.</p> <p><b>I know the main stages of making and can identify which tools and skills I need.</b></p> <p>I use my design brief to evaluate my product.</p>	<p>locational aspects, indoors/outdoors, speed of accessibility, strength and space).</p> <p><b>I can evaluate my own design against the design criteria.</b></p>	
--	---	--	--	--	---	--

# Substantive and disciplinary knowledge D&T curriculum Springfield Academy

## Textiles

EYFS	KS1 Cycle A	KS1 Cycle B	LKS2 Cycle A	LKS2 Cycle B	UKS2 Cycle A	UKS2 Cycle B
<p>Threading opportunities in fine motor stations. Adding buttons to materials and looking at patterns.</p>		<p>I know that a puppet is a model version of a person or animal that is controlled by someone.</p> <p><b>I know that a running stitch is a simple style of sewing in a straight line.</b></p> <p>I know that an over stitch is a different type of stitch which is good for sewing edges together.</p>	<p>I know that appliqué is a way of mending or decorating a textile by applying smaller pieces of fabric.</p> <p>I know that a product's function relies on material choices.</p> <p>I can identify some materials and explain their aesthetic and/or functional properties.</p>			<p><b>I know what a running stitch, backstitch, whipstitch and blanket stitch are.</b></p> <p>I know why templates/patterns are necessary.</p>

# Substantive and disciplinary knowledge D&T curriculum Springfield Academy

## Textiles (design, make and evaluate)

EYFS	KS1 Cycle A	KS1 Cycle B	LKS2 Cycle A	LKS2 Cycle B	UKS2 Cycle A	UKS2 Cycle B
		<p>I can investigate a range of puppets and their features.</p> <p>I can work with fabric to create a finger puppet.</p> <p>I can develop and practise sewing skills.</p> <p>I can say which materials and tools I will need to make my finger puppet.</p> <p>I can follow a design to create my finger puppet.</p>	<p><b>I can design, cut and shape a template for an Egyptian usekh or wesekh collar.</b></p> <p>I can follow my design criteria to create an Egyptian collar.</p> <p>I can select and cut fabrics with ease using fabric scissors.</p> <p>I can thread needles with greater independence.</p> <p>I can use cross-stitch to decorate</p>			<p>I can evaluate existing products against their design criteria.</p> <p><b>I can create an accurately measured paper template/pattern of my design.</b></p> <p>I can select a stitch to use on my final design and explain why I have chosen it.</p> <p>I can select decorative techniques and fastenings according to their functional properties and</p>

# Substantive and disciplinary knowledge D&T curriculum Springfield Academy

		<p>I can use a range of materials and tools safely and sensibly.</p> <p>I can share and demonstrate my completed puppet.</p> <p><b>I can evaluate my finished finger puppet and comment on the work of others.</b></p>	<p>or join fabric together.</p> <p><b>I can decorate fabric using a variety of techniques (such as appliqué, cross-stitch, beads, buttons, ribbon and pinking scissors).</b></p> <p>I can measure and attach ribbon using a running stitch.</p> <p>I can evaluate my end product against the design criteria.</p>			<p>aesthetic qualities.</p> <p><b>I can critically evaluate my product against the design criteria, intended user and purpose, identifying strengths and areas for development and carrying out appropriate tests.</b></p> <p>I can take into account the views of others when identifying improvements.</p>
--	--	--	---	--	--	--

# Substantive and disciplinary knowledge D&T curriculum Springfield Academy

## Electrical systems

EYFS	KS1 Cycle A	KS1 Cycle B	LKS2 Cycle A	LKS2 Cycle B	UKS2 Cycle A	UKS2 Cycle B
				<p>I know that a cross-sectional diagram is useful to communicate ideas about electrical components.</p> <p><b>I know how to make and use a switch as part of my design.</b></p>	<p>I know mechanical and electrical systems have an input, process and output.</p> <p>I know that a motor is used to power fairground rides.</p>	

# Substantive and disciplinary knowledge D&T curriculum Springfield Academy

## Electrical systems (design, make and evaluate)

EYFS	KS1 Cycle A	KS1 Cycle B	LKS2 Cycle A	LKS2 Cycle B	UKS2 Cycle A	UKS2 Cycle B
				<p>I can develop ideas about electrical systems through analysing existing products.</p> <p>I can use discussions with my peers to develop design criteria.</p> <p>I know who the target audience is for my product.</p> <p>I can generate realistic design ideas based on the specifics of the design criteria.</p>	<p><b>I can investigate ways of using electrical motors to create rotating parts.</b></p> <p>I know how to wire an electrical components into a fairground ride.</p> <p>I can check individual components if my electrical system is faulty.</p>	

# Substantive and disciplinary knowledge D&T curriculum Springfield Academy

				<p><b>I can use annotated sketches to develop my ideas, considering materials, measurements and decoration.</b></p> <p>I can wire up a circuit to the battery and switch to make the bulb work effectively in a prototype.</p> <p>I can reflect upon my design criteria when evaluating my product.</p>		
--	--	--	--	---	--	--

# Substantive and disciplinary knowledge D&T curriculum Springfield Academy

## Long term project plan

KS1 Cycle A	KS1 Cycle B	LKS2 Cycle A	LKS2 Cycle B	UKS2 Cycle A	UKS2 Cycle B
<p>Cooking and nutrition – Superfood salad</p> <p>Structures – building a model of a building from the Great Fire of London</p> <p>Mechanisms (levers and sliders) – a book cover with a working mechanism</p>	<p>Mechanisms (wheels and axles) – create a moving toy car!</p> <p>Cooking and Nutrition – Dips and Dippers</p> <p>Textiles – Animal puppets</p>	<p>Mechanisms (CAD) – Micro bits</p> <p>Mechanisms – Pneumatic toy fish or crocodile</p> <p>Textiles – Egyptian Collars</p>	<p>Cooking and nutrition – Roman bread</p> <p>Electrical Systems – A night light/safety light</p> <p>Structures (shell structures) – Packaging for Anglo-Saxon jewellery</p>	<p>Mechanisms and Electrical Systems – Make a moving fairground ride (including pulleys, switches and motors)</p> <p>Structures – Design an Anderson shelter</p> <p>Cooking and Nutrition – Mexican food</p>	<p>Mechanisms (cams) – moving model</p> <p>Textiles – Create a felt phone case</p> <p>Cooking and Nutrition – planning and cooking a seasonal meal</p>