



Design and technology and Art and design

Progression of skills and knowledge - Combined

Subject leader overview Year 1 - Year 6



Kapow
Primary™

Introduction

An overview of the **skills** and **knowledge** covered in each year group and strand across the units of lessons for those schools covering our [Combined Long-term plan](#). Please see the [Combined Long-term plan](#) document for the rationale behind the units selected to form part of the combined plan.

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	Year 1	Year 2	Year 3
Generating ideas	Explore their own ideas using a range of media.	Begin to generate ideas from a wider range of stimuli, exploring different media and techniques.	Generate ideas from a range of stimuli and carry out simple research and evaluation as part of the making process.
Sketchbooks	Use sketchbooks to explore ideas in an open-ended way.	Experiment in sketchbooks, using drawing to record ideas. Use sketchbooks to help make decisions about what to try out next.	Use sketchbooks for a wider range of purposes, for example recording things using drawing and annotations, planning and taking next steps in a making process.
Making skills (including Formal elements)	<p>Use a range of drawing materials such as pencils, chalk, charcoal, pastels, felt tips and pens.</p> <p>Develop observational skills to look closely and reflect surface texture through mark-making.</p> <p>To explore mark making using a range of tools; being able to create a diverse and purposeful range of marks through experimentation building skills and vocabulary.</p>	<p>Further develop mark-making within a greater range of media, demonstrating increased control.</p> <p>Develop observational skills to look closely and reflect surface texture through mark-making.</p> <p>Experiment with drawing on different surfaces, and begin to explore tone using a variety of pencil grade (HB, 2B, 4B) to show form, drawing light/dark lines, patterns and shapes.</p>	<p>Confidently use of a range of materials, selecting and using these appropriately with more independence.</p> <p>Draw with expression and begin to experiment with gestural and quick sketching.</p> <p>Developing drawing through further direct observation, using tonal shading and starting to apply an understanding of shape to communicate form and proportion.</p>
Knowledge of artists	Describe similarities and differences between practices in Art and design, eg between painting and sculpture, and link these to their own work.	Talk about art they have seen using some appropriate subject vocabulary. Be able to make links between pieces of art.	Use subject vocabulary to describe and compare creative works. Use their own experiences to explain how art works may have been made.
Evaluating and analysing	Describe and compare features of their own and other's art work.	Explain their ideas and opinions about their own and other's art work, giving reasons. Begin to talk about how they could improve their own work.	Confidently explain their ideas and opinions about their own and other's art work, giving reasons. Use sketchbooks as part of the problem-solving process and make changes to improve their work.

	Year 4	Year 5	Year 6
Generating ideas	Generate ideas from a range of stimuli, using research and evaluation of techniques to develop their ideas and plan more purposefully for an outcome.	Develop ideas more independently from their own research. Explore and record their plans, ideas and evaluations to develop their ideas towards an outcome.	Draw upon their experience of creative work and their research to develop their own starting points for creative outcomes.
Sketchbooks	Use sketchbooks purposefully to improve understanding, develop ideas and plan for an outcome.	Confidently use sketchbooks for purposes including recording observations and research, testing materials and working towards an outcome more independently.	Using a systematic and independent approach, research, test and develop ideas and plans using sketchbooks.
Making skills (including Formal elements)	<p>Apply observational skills, showing a greater awareness of composition and demonstrating the beginnings of an individual style.</p> <p>Use growing knowledge of different drawing materials, combining media for effect.</p> <p>Demonstrate greater control over drawing tools to show awareness of proportion and perspective, continuing to develop use of tone and more intricate mark making.</p>	<p>To use a broader range of stimulus to draw from, such as architecture, culture and photography. Begin to develop drawn ideas as part of an exploratory journey.</p> <p>Apply known techniques with a range of media, selecting these independently in response to a stimulus.</p> <p>Draw in a more sustained way, revisiting a drawing over time and applying their understanding of tone, texture, line, colour and form.</p>	<p>Draw expressively in their own personal style and in response to their choice of stimulus, showing the ability to develop a drawing independently.</p> <p>Apply new drawing techniques to improve their mastery of materials and techniques</p> <p>Push the boundaries of mark-making to explore new surfaces, e.g. drawing on clay, layering media and incorporating digital drawing techniques.</p>
Knowledge of artists	<p>Use subject vocabulary confidently to describe and compare creative works.</p> <p>Use their own experiences of techniques and making processes to explain how art works may have been made.</p>	<p>Research and discuss the ideas and approaches of artists across a variety of disciplines, being able to describe how the cultural and historical context may have influenced their creative work.</p>	<p>Describe, interpret and evaluate the work, ideas and processes used by artists across a variety of disciplines, being able to describe how the cultural and historical context may have influenced their creative work.</p>
Evaluating and analysing	<p>Build a more complex vocabulary when discussing their own and others' art.</p> <p>Evaluate their work more regularly and independently during the planning and making process.</p>	<p>Discuss the processes used by themselves and by other artists, and describe the particular outcome achieved.</p> <p>Use their knowledge of tools, materials and processes to try alternative solutions and make improvements to their work.</p>	<p>Give reasoned evaluations of their own and others work which takes account of context and intention.</p> <p>Independently use their knowledge of tools, materials and processes to try alternative solutions and make improvements to their work.</p>

	Year 1	Year 2	Year 3
Generating ideas	Explore their own ideas using a range of media.	Begin to generate ideas from a wider range of stimuli, exploring different media and techniques.	Generate ideas from a range of stimuli and carry out simple research and evaluation as part of the making process.
Sketchbooks	Use sketchbooks to explore ideas in an open-ended way.	Experiment in sketchbooks, using drawing to record ideas. Use sketchbooks to help make decisions about what to try out next.	Use sketchbooks for a wider range of purposes, for example recording things using drawing and annotations, planning and taking next steps in a making process.
Making skills (including Formal elements)	<p>Experiment with paint, using a wide variety of tools (eg brushes, sponges, fingers) to apply paint. Investigate colour mixing.</p> <p>Play with combinations of materials to create simple collage effects. Select materials based on their properties, <i>eg shiny, soft</i>.</p>	<p>Begin to develop some control when painting, applying knowledge of colour and how different media behave eg adding water to thin paint</p> <p>Mix different hues of primary and secondary colours by using different amounts of each starting colour or by adding water.</p> <p>Make choices about which materials to use for collage based on colour, texture, shape and pattern. Experiment with overlapping and overlaying materials to create interesting effects.</p>	<p>Select and use a variety of painting techniques, including applying their drawing skills, using their knowledge of colour mixing and making choices about suitable tools for a task eg choosing a fine paintbrush for making detailed marks.</p> <p>Mix colours with greater accuracy and begin to consider how colours can be used expressively. Explore contrasting and complimentary colours.</p> <p>Modify chosen collage materials in a range of ways eg by cutting, tearing, re-sizing or overlapping. In sketchbooks, use collage as a means of collecting ideas.</p>
Knowledge of artists	Describe similarities and differences between practices in Art and design, eg between painting and sculpture, and link these to their own work.	Talk about art they have seen using some appropriate subject vocabulary. Be able to make links between pieces of art.	Use subject vocabulary to describe and compare creative works. Use their own experiences to explain how art works may have been made.
Evaluating and analysing	Describe and compare features of their own and other's art work.	Explain their ideas and opinions about their own and other's art work, giving reasons. Begin to talk about how they could improve their own work.	Confidently explain their ideas and opinions about their own and other's art work, giving reasons. Use sketchbooks as part of the problem-solving process and make changes to improve their work.

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Generating ideas	Generate ideas from a range of stimuli, using research and evaluation of techniques to develop their ideas and plan more purposefully for an outcome.	Develop ideas more independently from their own research. Explore and record their plans, ideas and evaluations to develop their ideas towards an outcome.	Draw upon their experience of creative work and their research to develop their own starting points for creative outcomes.
Sketchbooks	Use sketchbooks purposefully to improve understanding, develop ideas and plan for an outcome.	Confidently use sketchbooks for purposes including recording observations and research, testing materials and working towards an outcome more independently.	Using a systematic and independent approach, research, test and develop ideas and plans using sketchbooks.
Making skills (including Formal elements)	<p>Explore the way paint can be used in different ways to create a variety of effects, eg creating a range of marks and textures in paint.</p> <p>Develop greater skill and control when using paint to depict forms, eg beginning to use tone to create 3D effects.</p> <p>Work selectively, choosing and adapting collage materials to create contrast and considering overall composition.</p>	<p>Apply paint with control in different ways to achieve different effects, experimenting with techniques used by other artists and applying ideas to their own artworks eg <i>making choices about painting surfaces or mixing paint with other materials</i>.</p> <p>Develop a painting from a drawing or other initial stimulus.</p> <p>Add collage to a painted, printed or drawn background for effect.</p> <p>Explore how collage can extend original ideas.</p> <p>Combine digital effects with other media.</p>	<p>Manipulate paint and painting techniques to suit a purpose, making choices based on their experiences. Work in a sustained way over several sessions to complete a piece.</p> <p>Analyse and describe how colour is used in other artists' work.</p> <p>Consider materials, scale and techniques when creating collage and other mixed media pieces.</p> <p>Create collage in response to a stimulus and work collaboratively on a larger scale.</p>
Knowledge of artists	<p>Use subject vocabulary confidently to describe and compare creative works.</p> <p>Use their own experiences of techniques and making processes to explain how art works may have been made.</p>	<p>Research and discuss the ideas and approaches of artists across a variety of disciplines, being able to describe how the cultural and historical context may have influenced their creative work.</p>	<p>Describe, interpret and evaluate the work, ideas and processes used by artists across a variety of disciplines, being able to describe how the cultural and historical context may have influenced their creative work.</p>
Evaluating and analysing	<p>Build a more complex vocabulary when discussing their own and others' art.</p> <p>Evaluate their work more regularly and independently during the planning and making process.</p>	<p>Discuss the processes used by themselves and by other artists, and describe the particular outcome achieved.</p> <p>Use their knowledge of tools, materials and processes to try alternative solutions and make improvements to their work.</p>	<p>Give reasoned evaluations of their own and others work which takes account of context and intention.</p> <p>Independently use their knowledge of tools, materials and processes to try alternative solutions and make improvements to their work.</p>

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Making skills (including Formal elements)	<p>Use their hands to manipulate a range of modelling materials.</p> <p>Create 3D forms to make things from their imagination or recreate things they have seen.</p>	<p>Develop understanding of 3D forms to construct and model simple forms using a range of materials.</p> <p>Use hands and tools with confidence when cutting, shaping and joining paper, card and malleable materials.</p> <p>Develop basic skills for shaping and joining clay, including exploring surface texture..</p>	<p>Able to plan and think through the making process to create 3D forms using a range of materials.</p> <p>Shape materials for a purpose, positioning and joining materials in new ways (tie, bind, stick, fold).</p> <p>Experiment with combining found objects and recyclable material to create sculpture.</p>
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Making skills (including Formal elements)	<p>Use more complex techniques to mould and form malleable materials, such as the coil pot technique in clay and adding detailed surface decoration.</p> <p>Show an understanding of appropriate finish and present work to a good standard.</p> <p>Respond to a stimulus and begin to make choices about materials used to work in 3D.</p>	<p>Investigate scale when creating forms in three dimensions.</p> <p>Explore a greater range of materials to create 3D forms <i>eg.wire and found materials</i></p> <p>Plan a sculpture, developing an idea in 2D into a three-dimensional piece.</p> <p>Persevere when constructions are challenging and work to problem solve more independently.</p>	<p>Uses personal plans and ideas to design and construct more complex sculptures and 3D forms.</p> <p>Combine materials and techniques appropriately to fit with ideas.</p> <p>Confidently problem-solve, edit and refine to create desired effects and end results.</p>
Knowledge of artists	<p>Use subject vocabulary confidently to describe and compare creative works.</p> <p>Use their own experiences of techniques and making processes to explain how art works may have been made.</p>	<p>Research and discuss the ideas and approaches of artists across a variety of disciplines, being able to describe how the cultural and historical context may have influenced their creative work.</p>	<p>Describe, interpret and evaluate the work, ideas and processes used by artists across a variety of disciplines, being able to describe how the cultural and historical context may have influenced their creative work.</p>
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Making skills (including Formal elements)	<p>Able to select colours, shapes and materials to suit ideas and purposes.</p> <p>Design and make something that is imagined or invented.</p> <p>Begin to develop skills such as measuring materials, cutting, and adding decoration.</p>	<p>Respond to a simple design brief with a range of ideas.</p> <p>Apply skills in cutting, arranging and joining a range of materials to include card, felt and cellophane.</p> <p>Experiment with techniques when trying out design ideas.</p> <p>Follow a plan for a making process, modifying and correcting things and knowing when to seek advice.</p>	<p>Learn a new making technique (paper making) and apply it as part of their own project.</p> <p>Investigate the history of a craft technique and share that knowledge in a personal way.</p> <p>Design and make creative work for different purposes, evaluating the success of the techniques used.</p>
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Sketchbooks	Use sketchbooks purposefully to improve understanding, develop ideas and plan for an outcome.	Confidently use sketchbooks for purposes including recording observations and research, testing materials and working towards an outcome more independently.	Using a systematic and independent approach, research, test and develop ideas and plans using sketchbooks.
Making skills (including Formal elements)	Learn new making techniques, comparing these and making decisions about which method to use to achieve a particular outcome. Design and make art for different purposes and begin to consider how this works in creative industries.	Design and make art for different purposes and begin to consider how this works in creative industries eg in architecture, magazines, logos, digital media and interior design. Extend ideas for designs through sketchbook use and research, justifying choices made during the design process.	Develop personal, imaginative responses to a design brief, using sketchbooks and independent research. Justify choices made during a design process, explaining how the work of creative practitioners have influenced their final outcome.
Knowledge of artists	Use subject vocabulary confidently to describe and compare creative works. Use their own experiences of techniques and making processes to explain how art works may have been made.	Research and discuss the ideas and approaches of artists across a variety of disciplines, being able to describe how the cultural and historical context may have influenced their creative work.	Describe, interpret and evaluate the work, ideas and processes used by artists across a variety of disciplines, being able to describe how the cultural and historical context may have influenced their creative work.
Evaluating and analysing	Build a more complex vocabulary when discussing their own and others' art. Evaluate their work more regularly and independently during the planning and making process.	Discuss the processes used by themselves and by other artists, and describe the particular outcome achieved. Use their knowledge of tools, materials and processes to try alternative solutions and make improvements to their work.	Give reasoned evaluations of their own and others work which takes account of context and intention. Independently use their knowledge of tools, materials and processes to try alternative solutions and make improvements to their work.

	Year 1	Year 2
Pattern	<p>Know that a pattern is a design in which shapes, colours or lines are repeated.</p>	<p>Know that surface rubbings can be used to add make patterns</p> <p>Know that drawing techniques such as hatching, scribbling, stippling, and blending can make patterns.</p> <p>Know that patterns can be used to add detail to an artwork.</p>
Texture	<p>Know that texture means 'what something feels like'</p> <p>Know that different marks can be used to represent the textures of objects</p> <p>Know that different drawing tools make different marks.</p>	<p>Know that collage materials can be chosen to represent real-life textures.</p> <p>Know that collage materials can be overlapped and overlaid to add texture.</p> <p>Know that drawing techniques such as hatching, scribbling, stippling, and blending can create surface texture.</p>
Tone	<p>Know that 'tone' in art means 'light and dark'</p> <p>Know that we can add tone to a drawing by shading and filling a shape</p>	<p>Know that shading helps make drawn objects look more three dimensional.</p> <p>Know that different pencil grades make different tones.</p>

	Year 1	Year 2
Colour	<p>Know that the primary colours are red, yellow and blue.</p> <p>Know that primary colours can be mixed to make secondary colours:</p> <ul style="list-style-type: none"> • Red + yellow = orange • Yellow + blue = green • Blue + red = purple 	<p>Know that different amounts of paint and water can be used to mix hues of secondary colours.</p> <p>Know that colours can be mixed to 'match' real life objects or to create things from your imagination</p> <p>Know that colour can be used to show how it feels to be in a particular place, eg the seaside</p>
Form	<p>Know that we can change paper from 2D to 3D by folding, rolling and scrunching it.</p> <p>To know that three dimensional art is called sculpture.</p>	<p>Know that 'composition' means how things are arranged on the page.</p> <p>Know that pieces of clay can be joined using the 'scratch and slip' technique.</p> <p>Know that a clay surface can be decorated by pressing into it or by joining pieces on.</p>
Shape	<p>Know that paper can be shaped by cutting and folding it.</p>	<p>Know that collage materials can be shaped to represent shapes in an image.</p> <p>Know that shapes can be organic (natural) and irregular.</p> <p>Know that shapes can geometric if they have mostly straight lines and angles.</p> <p>Know that patterns can be made using shapes.</p>
Line	<p>Know that drawing tools can be used in a variety of ways to create different lines.</p> <p>Know that lines can represent movement in drawings.</p>	<p>Know that lines can be used to fill shapes, to make outlines and to add detail or pattern.</p>

	Year 3	Year 4	Year 5	Year 6
Colour	<p>Know that complementary colours appear opposite each other on the colour wheel, and when placed next to each other, a strong contrast or 'clash' is created.</p> <p>Know that paint colours can be mixed using natural substances, and that prehistoric peoples used these paints.</p>	<p>To know that adding black to a colour creates a shade.</p> <p>To know that adding white to a colour creates a tint.</p>	<p>To know that artists use colour to create an atmosphere or to represent feelings in an artwork, for example by using warm or cool colours.</p>	<p>To know that a 'monochromatic' artwork uses tints and shades of just one colour.</p> <p>To know that colours can be symbolic and have meanings that vary according to your culture or background, eg red for danger or for celebration.</p>
Form	<p>To know that three dimensional forms are either organic (natural) or geometric (mathematical shapes, like a cube).</p> <p>To know that organic forms can be abstract.</p>	<p>To know that using lighter and darker tints and shades of a colour can create a 3D effect.</p> <p>Know that simple structures can be made stronger by adding layers, folding and rolling.</p>	<p>To know that an art installation is often a room or environment in which the viewer 'experiences' the art all around them.</p> <p>To know that the size and scale of three-dimensional art work changes the effect of the piece.</p>	<p>To know that the surface textures created by different materials can help suggest form in two-dimensional art work.</p>
Shape	<p>To know that negative shapes show the space around and between objects.</p>	<p>To know how to use basic shapes to form more complex shapes and patterns.</p>	<p>To know that a silhouette is a shape filled with a solid flat colour that represents an object.</p>	<p>To know how an understanding of shape and space can support creating effective composition.</p>
Line	<p>To know that different drawing tools can create different types of lines.</p>	<p>To know that lines can be lighter or darker, or thicker or thinner and that this can add expression or movement to a drawing.</p>	<p>To know that lines can be used by artists to control what the viewer looks at within a composition, eg by using diagonal lines to draw your eye into the centre of a drawing.</p>	<p>To know how line is used beyond drawing and can be applied to other art forms.</p>

	Year 3	Year 4	Year 5	Year 6
Pattern	<p>To know that pattern can be man-made (like a printed wallpaper) or natural (like a giraffe's skin).</p> <p>To know that the starting point for a repeating pattern is called a motif, and a motif can be arranged in different ways to make varied patterns.</p>	<p>To know that symmetry can be used to create repeating patterns.</p> <p>To know that patterns can be irregular, and change in ways you wouldn't expect.</p>	<p>To know that artists create pattern to add expressive detail to art works, for example Chila Kumari Singh Burman using small everyday objects to add detail to sculptures.</p>	<p>To know that pattern can be created in many different ways, eg in the rhythm of brushstrokes in a painting (like the work of van Gogh) or in repeated shapes within a composition.</p>
Texture	<p>To know that texture in an artwork can be real (what the surface actually feels like) or a surface can be made to appear textured, as in a drawing using shading to recreate a fluffy object.</p>	<p>To know how to use texture more purposely to achieve a specific effect or to replicate a natural surface.</p>	<p>To know how to create texture on different materials.</p>	<p>To know that applying thick layers of paint to a surface is called impasto, and is used by artists such as Claude Monet to describe texture.</p>
Tone	<p>To know some basic rules for shading when drawing, eg shade in one direction, blending tones smoothly and with no gaps.</p> <p>To know that shading is used to create different tones in an artwork and can include hatching, cross-hatching, scribbling and stippling.</p>	<p>To know that using lighter and darker tints and shades of a colour can create a 3D effect.</p> <p>To know that tone can be used to create contrast in an artwork.</p>	<p>To know that tone can help show the foreground and background in an artwork.</p>	<p>To know that chiaroscuro means 'light and dark' and is a term used to describe high-contrast images.</p>

		Year 1	Year 2
		<u>Constructing a windmill</u>	<u>Baby bear's chair</u>
Skills	Design	<ul style="list-style-type: none"> • Learning the importance of a clear design criteria. • Including individual preferences and requirements in a design. 	<ul style="list-style-type: none"> • Generating and communicating ideas using sketching and modelling. • Learning about different types of structures, found in the natural world and in everyday objects.
	Make	<ul style="list-style-type: none"> • Making stable structures from card, tape and glue. • Learning how to turn 2D nets into 3D structures. • Following instructions to cut and assemble the supporting structure of a windmill. • Making functioning turbines and axles which are assembled into a main supporting structure. 	<ul style="list-style-type: none"> • Making a structure according to design criteria. • Creating joints and structures from paper/card and tape. • Building a strong and stiff structure by folding paper.
	Evaluate	<ul style="list-style-type: none"> • Evaluating a windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't • Suggest points for improvements 	<ul style="list-style-type: none"> • Exploring the features of structures. • Comparing the stability of different shapes. • Testing the strength of own structures. • Identifying the weakest part of a structure. • Evaluating the strength, stiffness and stability of own structure.
Knowledge	Technical	<ul style="list-style-type: none"> • To understand that the shape of materials can be changed to improve the strength and stiffness of structures. • To understand that cylinders are a strong type of structure (e.g. the main shape used for windmills and lighthouses). • To understand that axles are used in structures and mechanisms to make parts turn in a circle. • To begin to understand that different structures are used for different purposes. • To know that a structure is something that has been made and put together. 	<ul style="list-style-type: none"> • To know that shapes and structures with wide, flat bases or legs are the most stable. • To understand that the shape of a structure affects its strength. • To know that materials can be manipulated to improve strength and stiffness. • To know that a structure is something which has been formed or made from parts. • To know that a 'stable' structure is one which is firmly fixed and unlikely to change or move. • To know that a 'strong' structure is one which does not break easily. • To know that a 'stiff' structure or material is one which does not bend easily.
	Additional	<ul style="list-style-type: none"> • To know that a client is the person I am designing for. • To know that design criteria is a list of points to ensure the product meets the clients needs and wants. • To know that a windmill harnesses the power of wind for a purpose like grinding grain, pumping water or generating electricity. • To know that windmill turbines use wind to turn and make the machines inside work. • To know that a windmill is a structure with sails that are moved by the wind. • To know the three main parts of a windmill are the turbine, axle and structure. 	<ul style="list-style-type: none"> • To know that natural structures are those found in nature. • To know that man-made structures are those made by people.

		Year 3	Year 4
		<u>Constructing a castle</u>	<u>Pavilions</u>
Skills	Design	<ul style="list-style-type: none"> • Designing a castle with key features to appeal to a specific person/purpose. • Drawing and labelling a castle design using 2D shapes, labelling: -the 3D shapes that will create the features - materials needed and colours. • Designing and/or decorating a castle tower on CAD software. 	<ul style="list-style-type: none"> • Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect. • Building frame structures designed to support weight.
	Make	<ul style="list-style-type: none"> • Constructing a range of 3D geometric shapes using nets. • Creating special features for individual designs. • Making facades from a range of recycled materials. 	<ul style="list-style-type: none"> • Creating a range of different shaped frame structures. • Making a variety of free standing frame structures of different shapes and sizes. • Selecting appropriate materials to build a strong structure and cladding. • Reinforcing corners to strengthen a structure. • Creating a design in accordance with a plan. • Learning to create different textural effects with materials.
	Evaluate	<ul style="list-style-type: none"> • Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison to the original design. • Suggesting points for modification of the individual designs. 	<ul style="list-style-type: none"> • Evaluating structures made by the class. • Describing what characteristics of a design and construction made it the most effective. • Considering effective and ineffective designs.
Knowledge	Technical	<ul style="list-style-type: none"> • To understand that wide and flat based objects are more stable. • To understand the importance of strength and stiffness in structures. 	<ul style="list-style-type: none"> • To understand what a frame structure is. • To know that a 'free-standing' structure is one which can stand on its own.
	Additional	<ul style="list-style-type: none"> • To know the following features of a castle: flags, towers, battlements, turrets, curtain walls, moat, drawbridge and gatehouse - and their purpose. • To know that a façade is the front of a structure. • To understand that a castle needed to be strong and stable to withstand enemy attack. • To know that a paper net is a flat 2D shape that can become a 3D shape once assembled. • To know that a design specification is a list of success criteria for a product. 	<ul style="list-style-type: none"> • To know that a pavilion is a decorative building or structure for leisure activities. • To know that cladding can be applied to structures for different effects. • To know that aesthetics are how a product looks. • To know that a product's function means its purpose. • To understand that the target audience means the person or group of people a product is designed for. • To know that architects consider light, shadow and patterns when designing.

		Year 6
		<u>Playgrounds</u>
Skills	Design	<ul style="list-style-type: none"> • Designing a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs.
	Make	<ul style="list-style-type: none"> • Building a range of play apparatus structures drawing upon new and prior knowledge of structures. • Measuring, marking and cutting wood to create a range of structures. • Using a range of materials to reinforce and add decoration to structures.
	Evaluate	<ul style="list-style-type: none"> • Improving a design plan based on peer evaluation. • Testing and adapting a design to improve it as it is developed. • Identifying what makes a successful structure.
Knowledge	Technical	<ul style="list-style-type: none"> • To know that structures can be strengthened by manipulating materials and shapes.
	Additional	<ul style="list-style-type: none"> • To understand what a 'footprint plan' is. • To understand that in the real world, design , can impact users in positive and negative ways. • To know that a prototype is a cheap model to test a design idea.

		Year 2	
		<u>Fairground wheel</u>	<u>Making a moving monster</u>
Skills	Design	<ul style="list-style-type: none"> • Selecting a suitable linkage system to produce the desired motion. • Designing a wheel. 	<ul style="list-style-type: none"> • Creating a class design criteria for a moving monster. • Designing a moving monster for a specific audience in accordance with a design criteria.
	Make	<ul style="list-style-type: none"> • Selecting materials according to their characteristics. • Following a design brief. 	<ul style="list-style-type: none"> • Making linkages using card for levers and split pins for pivots. • Experimenting with linkages adjusting the widths, lengths and thicknesses of card used. • Cutting and assembling components neatly.
	Evaluate	<ul style="list-style-type: none"> • Evaluating different designs. • Testing and adapting a design. 	<ul style="list-style-type: none"> • Evaluating own designs against design criteria. • Using peer feedback to modify a final design.
Knowledge	Technical	<ul style="list-style-type: none"> • To know that different materials have different properties and are therefore suitable for different uses. 	<ul style="list-style-type: none"> • To know that mechanisms are a collection of moving parts that work together as a machine to produce movement. • To know that there is always an input and output in a mechanism. • To know that an input is the energy that is used to start something working. • To know that an output is the movement that happens as a result of the input. • To know that a lever is something that turns on a pivot. • To know that a linkage mechanism is made up of a series of levers.
	Additional	<ul style="list-style-type: none"> • To know the features of a ferris wheel include the wheel, frame, pods, a base an axle and an axle holder. • To know that it is important to test my design as I go along so that I can solve any problems that may occur. 	<ul style="list-style-type: none"> • To know some real-life objects that contain mechanisms.

		Year 4	Year 5
		<u>Making a slingshot car</u>	<u>Pop up book</u>
Skills	Design	<ul style="list-style-type: none"> • Designing a shape that reduces air resistance. • Drawing a net to create a structure from. • Choosing shapes that increase or decrease speed as a result of air resistance. • Personalising a design. 	<ul style="list-style-type: none"> • Designing a pop-up book which uses a mixture of structures and mechanisms. • Naming each mechanism, input and output accurately. • Storyboarding ideas for a book.
	Make	<ul style="list-style-type: none"> • Measuring, marking, cutting and assembling with increasing accuracy. • Making a model based on a chosen design. 	<ul style="list-style-type: none"> • Following a design brief to make a pop up book, neatly and with focus on accuracy. • Making mechanisms and/or structures using sliders, pivots and folds to produce movement. • Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result.
	Evaluate	<ul style="list-style-type: none"> • Evaluating the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance. 	<ul style="list-style-type: none"> • Evaluating the work of others and receiving feedback on own work. • Suggesting points for improvement.
Knowledge	Technical	<ul style="list-style-type: none"> • To understand that all moving things have kinetic energy. • To understand that kinetic energy is the energy that something (object/person) has by being in motion. • To know that air resistance is the level of drag on an object as it is forced through the air. • To understand that the shape of a moving object will affect how it moves due to air resistance. 	<ul style="list-style-type: none"> • To know that mechanisms control movement. • To understand that mechanisms can be used to change one kind of motion into another. • To understand how to use sliders, pivots and folds to create paper-based mechanisms.
	Additional	<ul style="list-style-type: none"> • To understand that products change and evolve over time. • To know that aesthetics means how an object or product looks in design and technology. • To know that a template is a stencil you can use to help you draw the same shape accurately. • To know that a birds-eye view means a view from a high angle (as if a bird in flight). • To know that graphics are images which are designed to explain or advertise something. • To know that it is important to assess and evaluate design ideas and models against a list of design criteria. 	<ul style="list-style-type: none"> • To know that a design brief is a description of what I am going to design and make. • To know that designers often want to hide mechanisms to make a product more aesthetically pleasing.

		Year 4	Year 5
		<u>Torches</u>	<u>Doodlers</u>
Skills	Design	<ul style="list-style-type: none"> Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas. 	<ul style="list-style-type: none"> Identifying factors that could be changed on existing products and explaining how these would alter the form and function of the product. Developing design criteria based on findings from investigating existing products. Developing design criteria that clarifies the target user.
	Make	<ul style="list-style-type: none"> Making a torch with a working electrical circuit and switch. Using appropriate equipment to cut and attach materials. Assembling a torch according to the design and success criteria. 	<ul style="list-style-type: none"> Altering a product's form and function by tinkering with its configuration. Making a functional series circuit, incorporating a motor. Constructing a product with consideration for the design criteria. Breaking down the construction process into steps so that others can make the product.
	Evaluate	<ul style="list-style-type: none"> Evaluating electrical products. Testing and evaluating the success of a final product. 	<ul style="list-style-type: none"> Carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses. Determining which parts of a product affect its function and which parts affect its form. Analysing whether changes in configuration positively or negatively affect an existing product. Peer evaluating a set of instructions to build a product.
Knowledge	Technical	<ul style="list-style-type: none"> To understand that electrical conductors are materials which electricity can pass through. To understand that electrical insulators are materials which electricity cannot pass through. To know that a battery contains stored electricity that can be used to power products. To know that an electrical circuit must be complete for electricity to flow. To know that a switch can be used to complete and break an electrical circuit. 	<ul style="list-style-type: none"> To know that series circuits only have one direction for the electricity to flow. To know when there is a break in a series circuit, all components turn off. To know that an electric motor converts electrical energy into rotational movement, causing the motor's axle to spin. To know a motorised product is one which uses a motor to function.
	Additional	<ul style="list-style-type: none"> To know the features of a torch: case, contacts, batteries, switch, reflector, lamp, lens. To know facts from the history and invention of the electric light bulb(s) - by Sir Joseph Swan and Thomas Edison. 	<ul style="list-style-type: none"> To know that product analysis is critiquing the strengths and weaknesses of a product. To know that 'configuration' means how the parts of a product are arranged.

		Year 1	Year 3
		<u>Fruit and vegetables</u>	<u>Eating seasonally</u>
Skills	Design	<ul style="list-style-type: none"> • Designing smoothie carton packaging by-hand or on ICT software. 	<ul style="list-style-type: none"> • Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish.
	Make	<ul style="list-style-type: none"> • Chopping fruit and vegetables safely to make a smoothie. • Identifying if a food is a fruit or a vegetable. • Learning where and how fruits and vegetables grow. 	<ul style="list-style-type: none"> • Knowing how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination. • Following the instructions within a recipe.
	Evaluate	<ul style="list-style-type: none"> • Tasting and evaluating different food combinations. • Describing appearance, smell and taste. • Suggesting information to be included on packaging. 	<ul style="list-style-type: none"> • Establishing and using design criteria to help test and review dishes. • Describing the benefits of seasonal fruits and vegetables and the impact on the environment. • Suggesting points for improvement when making a seasonal tart.
Knowledge	Cooking and nutrition	<ul style="list-style-type: none"> • Understanding the difference between fruits and vegetables. • To understand that some foods typically known as vegetables are actually fruits (e.g. cucumber). • To know that a blender is a machine which mixes ingredients together into a smooth liquid. • To know that a fruit has seeds and a vegetable does not. • To know that fruits grow on trees or vines. • To know that vegetables can grow either above or below ground. • To know that vegetables can come from different parts of the plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber). 	<ul style="list-style-type: none"> • To know that not all fruits and vegetables can be grown in the UK. • To know that climate affects food growth. • To know that vegetables and fruit grow in certain seasons. • To know that cooking instructions are known as a 'recipe'. • To know that imported food is food which has been brought into the country. • To know that exported food is food which has been sent to another country.. • To understand that imported foods travel from far away and this can negatively impact the environment. • To know that each fruit and vegetable gives us nutritional benefits because they contain vitamins, minerals and fibre. • To understand that vitamins, minerals and fibre are important for energy, growth and maintaining health. • To know safety rules for using, storing and cleaning a knife safely. • To know that similar coloured fruits and vegetables often have similar nutritional benefits.

		Year 5
		<u>What could be healthier?</u>
Skills	Design	<ul style="list-style-type: none"> Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients. Writing an amended method for a recipe to incorporate the relevant changes to ingredients. Designing appealing packaging to reflect a recipe.
	Make	<ul style="list-style-type: none"> Cutting and preparing vegetables safely. Using equipment safely, including knives, hot pans and hobs. Knowing how to avoid cross-contamination. Following a step by step method carefully to make a recipe.
	Evaluate	<ul style="list-style-type: none"> Identifying the nutritional differences between different products and recipes. Identifying and describing healthy benefits of food groups.
Knowledge	Cooking and nutrition	<ul style="list-style-type: none"> To understand where meat comes from - learning that beef is from cattle and how beef is reared and processed, including key welfare issues. To know that I can adapt a recipe to make it healthier by substituting ingredients. To know that I can use a nutritional calculator to see how healthy a food option is. To understand that 'cross-contamination' means bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects.

		Year 1	Year 6
		<u>Puppets</u>	<u>Waistcoats</u>
Skills	Design	<ul style="list-style-type: none"> Using a template to create a design for a puppet. 	<ul style="list-style-type: none"> Designing a waistcoat in accordance to a specification linked to set of design criteria. Annotating designs, to explain their decisions.
	Make	<ul style="list-style-type: none"> Cutting fabric neatly with scissors. Using joining methods to decorate a puppet. Sequencing the steps taken during construction. 	<ul style="list-style-type: none"> Using a template when cutting fabric to ensure they achieve the correct shape. Using pins effectively to secure a template to fabric without creases or bulges. Marking and cutting fabric accurately, in accordance with their design. Sewing a strong running stitch, making small, neat stitches and following the edge. Tying strong knots. Decorating a waistcoat, attaching features (such as appliqué) using thread. Finishing the waistcoat with a secure fastening (such as buttons). Learning different decorative stitches. Sewing accurately with evenly spaced, neat stitches.
	Evaluate	<ul style="list-style-type: none"> Reflecting on a finished product, explaining likes and dislikes. 	<ul style="list-style-type: none"> Reflecting on their work continually throughout the design, make and evaluate process.
Knowledge		<ul style="list-style-type: none"> To know that 'joining technique' means connecting two pieces of material together. To know that there are various temporary methods of joining fabric by using staples, glue or pins. To understand that different techniques for joining materials can be used for different purposes. To understand that a template (or fabric pattern) is used to cut out the same shape multiple times. To know that drawing a design idea is useful to see how an idea will look. 	<ul style="list-style-type: none"> To understand that it is important to design clothing with the client/ target customer in mind. To know that using a template (or clothing pattern) helps to accurately mark out a design on fabric. To understand the importance of consistently sized stitches.

		Year 3	Year 6
		<u>Electronic charm</u>	<u>Navigating the world</u>
Skills	Design	<ul style="list-style-type: none"> • Problem solving by suggesting potential features on a Micro: bit and justifying my ideas • Developing design ideas for a technology pouch • Drawing and manipulating 2D shapes, using computer-aided design, to produce a point of sale badge 	<ul style="list-style-type: none"> • Writing a design brief from information submitted by a client • Developing design criteria to fulfil the client's request • Considering and suggesting additional functions for my navigation tool • Developing a product idea through annotated sketches • Placing and manoeuvring 3D objects, using CAD • Changing the properties of, or combine one or more 3D objects, using CAD
	Make	<ul style="list-style-type: none"> • Using a template when cutting and assembling the pouch • Following a list of design requirements • Selecting and using the appropriate tools and equipment for cutting, joining, shaping and decorating a foam pouch • Applying functional features such as using foam to create soft buttons 	<ul style="list-style-type: none"> • Considering materials and their functional properties, especially those that are sustainable and recyclable (for example, cork and bamboo) • Explaining material choices and why they were chosen as part of a product concept • Programming an N,E, S,W cardinal compass
	Evaluate	<ul style="list-style-type: none"> • Analysing and evaluating an existing product • Identifying the key features of a pouch 	<ul style="list-style-type: none"> • Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool • Developing an awareness of sustainable design • Identifying key industries that utilise 3D CAD modelling and explain why • Describing how the product concept fits the client's request and how it will benefit the customers • Explaining the key functions in my program, including any additions • Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool • Explaining the key functions and features of my navigation tool to the client as part of a product concept pitch • Demonstrating a functional program as part of a product concept
Knowledge	Technical	<ul style="list-style-type: none"> • To understand that in programming a 'loop' is code that repeats something again and again until stopped • To know that a Micro:bit is a pocket-sized, codeable computer • Writing a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm 	<ul style="list-style-type: none"> • To know that accelerometers can detect movement • To understand that sensors can be useful in products as they mean the product can function without human input
	Additional	<ul style="list-style-type: none"> • To know what the 'Digital Revolution' is and features of some of the products that have evolved as a result • To know that in Design and technology the term 'smart' means a programmed product • To know the difference between analogue and digital technologies • To understand what is meant by 'point of sale display' • To know that CAD stands for Computer-aided design 	<ul style="list-style-type: none"> • To know that designers write design briefs and develop design criteria to enable them to fulfil a client's request • To know that 'multifunctional' means an object or product has more than one function • To know that magnetometers are devices that measure the Earth's magnetic field to determine which direction you are facing

Version history

This page shows recent updates to this document.

Date	Update
08.07.22	Update to include the information on p.2 about an update to the long-term plan which provides a rationale for the units chosen.
08.06.22	Updated to include the <i>Doodlers</i> unit (Y5) which has replaced the <i>Electronic greeting cards</i> unit.
01.09.22	Detail added to some skills statements.