



Design and Technology Progression of Skills & Knowledge

Updated September 2026



EYFS Progression

Skills Progression

Design

- Making verbal plans and material choices.
- Developing a junk model.
- Designing a junk model boat.
- Using knowledge from exploration to inform design.

Make

- Improving fine motor/scissor skills with a variety of materials.
- Joining materials in a variety of ways (temporary and permanent).
- Joining different materials together.
- Describing their junk model, and how they intend to put it together.
- Making a boat that floats and is waterproof, considering material choices.

Evaluate

- Giving a verbal evaluation of their own and others' junk models with adult support.
- Checking to see if their model matches their plan.
- Considering what they would do differently if they were to do it again.

Knowledge Progression

Technical

- To know there are a range to different materials that can be used to make a model and that they are all slightly different.
- Making simple suggestions to fix their junk model.
- To know that 'waterproof' materials are those which do not absorb water.

Additional

- To know that some objects float and others sink.
- To know the different parts of a boat.

- Describing their favourite and least favourite part of their model.
- Making predictions about, and evaluating different materials to see if they are waterproof.
- Making predictions about, and evaluating existing boats to see which floats best.
- Testing their design and reflecting on what could have been done differently.
- Investigating the how the shapes and structure of a boat affect the way it moves.

National Curriculum – End of KS1

- design purposeful, functional, appealing products for themselves and other users based on design criteria
- generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology
- select from and use a range of tools and equipment to perform practical tasks
- select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics
- explore and evaluate a range of existing products
- evaluate their ideas and products against design criteria
- build structures, exploring how they can be made stronger, stiffer and more stable
- explore and use mechanisms in their products.
- use the basic principles of a healthy and varied diet to prepare dishes
- understand where food comes from.

KS1 Progression

Year 1

Skills Progression

Design

- Thinking about what others might want from a design.
- Beginning to recognise how products and designs in the world around us solve certain needs.
- Considering who they are designing for – identifying the user
- Stating what they intend to make and why – identifying the purpose.
- Talking about ideas, with purpose and user in mind.
- Talking about existing products when generating ideas.
- Using basic drawing skills to communicate ideas.
- Learning the importance of a clear design criteria
- Including individual preferences and requirements in a design

Make

- Choosing between a small number of materials, ingredients or components.
- Explaining their choices based on personal experiences.
- Requesting equipment appropriate to the purpose. (e.g. scissors for cutting, glue for joining)

Knowledge Progression

Technical

- Recognising that different structures are used for different purposes.
- Exploring the features of structures.
- Describing structures as buildings or freestanding structures.
- Making stable structures from card.
- Creating supporting structures to aid stability.
- Using stable objects like cylinders to create 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.
- To know that the sails or blades of a windmill are moved by the wind.
- To know that a structure is something built for a reason.
- To know that stable structures do not topple.
- To know that adding weight to the base of a structure can make it more stable

- Beginning to use objects with a fixed width or length to create even spacing of markings or cuts (e.g. a lolly stick).
- Refining their grip to cut competently and confidently.
- Cutting straight lines and evenly spaced lines.
- Beginning to cut large shapes and thicker materials like card.
- Making stable structures from card.
- 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
- Finding the middle of an object.
- Puncturing holes.
- Adding weight to structures.
- Creating supporting structures.
- Cutting evenly and carefully.

Evaluate

- Discussing existing products, saying what they like about them.
- Comparing two products and discuss which is better for a specific purpose.
- Saying what they like about their peers' designs and products.
- Accepting feedback and understanding it is meant to improve their work
- Evaluating a windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't.

Additional

- To know that the 'user' is the person who will use the product.
- To know that different users may want different things from a design.
- To know that who they are designing for makes a difference to what they design.
- To know that the purpose is what something is for.
- To know that existing products can help when deciding what to design.
- To know that drawings are a way to explain ideas.
- To know that a plan is deciding what to do first and next.
- To know that different equipment does different things.
- To know the names of common pieces of equipment.
- To know that some products will be better than others.
- To know that their ideas or products can be made better.
- To know that their ideas can improve someone else's work.
- To know that other people's ideas can help make their work better.
- To know that a structure is something that has been made and put together.
- To know that stable structures do not topple.

- Suggest points for improvements.

- To know that shapes and structures with wide, flat bases or legs are the most stable.
- To know that adding weight to the base of a structure can make it more stable.

To know that design criteria are 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.

To know that windmills are used to generate power and were used for grinding flour

Year 2

Design

- Using a simple design brief that outlines the intended use, target user, and key features of the product, to create simple design criteria.
- Creating ideas with design criteria in mind.
- Referring to specific parts of existing products when generating ideas.
- Generating and communicating ideas using sketching and modelling.

Technical

- Recognising that different structures are used for different purposes.
- Exploring the features of structures.
- Making stable structures from card.
- Creating supporting structures to aid stability.
- Using stable objects like cylinders to create structures.
- Building a strong and stiff structure by folding paper.
- Folding to strengthen or stiffen.

- Learning about different types of structures, found in the natural world and in everyday objects.

Make

- Choosing materials, ingredients or components from a wider range of materials, ingredients or components.
- Explaining their choices based on the properties of materials and components.
- Looking for ways to make cutting easier, like turning the material they are cutting, not fully closing scissors etc.
- Choosing known geometric shapes when making.
- Beginning to shape objects to improve how they work.
- Making a structures according to design criteria.

- Comparing the stability of different shapes.
- Identifying the weakest part of a structure.
- 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

- To know that a design brief helps to decide what to make.
- To know that design criteria are the steps for making a product successful.
- To know that design criteria help when thinking of ideas.
- To know that different products work in different ways and have parts that make them work.
- To know some properties of materials like hard, soft, flexible, waterproof, strong etc.
- To know the names of some geometric shapes, triangle, pyramid, square, cube, circle, sphere.

- To know that existing products can be evaluated against design criteria.
- To know that design criteria help to decide if their product is a success.
- To know that improve means to make something better.
- To know that a structure is something that has been made and put together.
- To know 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 'strong' structure is one which does not break easily.
- To know that a 'stiff' structure or material is one which does not bend easily.
- To know that natural structures are those found in nature.
- To know that man-made structures are those made by people.

National Curriculum – End of KS1

- design purposeful, functional, appealing products for themselves and other users based on design criteria
- generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology
- select from and use a range of tools and equipment to perform practical tasks
- select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics
- explore and evaluate a range of existing products
- evaluate their ideas and products against design criteria
- build structures, exploring how they can be made stronger, stiffer and more stable

- explore and use mechanisms in their products.
- use the basic principles of a healthy and varied diet to prepare dishes
- understand where food comes from.

KS2 Progression**Year 3****Skills Progression****Design**

- Creating simple design criteria that outline basic functionality and appeal to individual users or target audiences.
- Beginning to use 2D CAD software to communicate their ideas.
- 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.

Make

- Creating accurate shapes from templates.
- Cutting out more complex shapes accurately.
- Cutting out more complex shapes accurately.
- Constructing a range of 3D geometric shapes using nets.
- Creating special features for individual designs.
- Making facades from a range of recycled materials.

Knowledge Progression**Technical**

- Beginning to understand how different structures are built.
- Beginning to understand how different structures are built.
- Beginning to understand how different structures are built.
- To understand that wide and flat based objects are more stable.
- To understand the importance of strength and stiffness in structures.

Additional

- To know that creating accurate shapes improves how they look and sometimes their function.
- To know good suggestions help give better feedback.
- To know that they can choose to use feedback or not.
- To know that a shell structure is a hollow shape with a thin outer layer.
- To know that 3D shapes can form structures.
- To know structures can be strengthened by manipulating materials and shapes.
- To know the following features of a castle: flags, towers, battlements, turrets, curtain walls, moat, drawbridge and gatehouse - and their purpose.

Evaluate

- Explaining why they think certain aspects of a peer's design are effective or why they suggested specific improvements.
- Explaining why they think certain aspects of a peer's design are effective or why they suggested specific improvements.
- Explaining why they think certain aspects of a peer's design are effective or why they suggested specific improvements.
- 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.
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- 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.
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Year 4

Design

- Creating simple design criteria that outline basic functionality and appeal to individual users or target audiences.
- Noticing simple problems or needs in everyday life.
- Developing drawing and sketching skills with a focus on clarity and simplicity.
- Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect.

Technical

- Strengthening structures by layering materials (lamination).
- Strengthening structures by ribbing.
- To know how some different structures are built.
- To know that structures can be strengthened by manipulating materials and shapes.
- To know a shell structure is a hollow shape with a thin outer layer.
- To understand what a frame structure is.
- To know that a 'free-standing' structure is one which can stand on its own.

- Building frame structures designed to support weight.

Make

- Selecting materials, components or ingredients based on their form as well as their functional properties.
- Explaining choices with regard to function and form.
- Choosing shapes to suit the function of a product.
- 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

- Evaluating designs by comparing them against design criteria.
- Considering feedback from peers to suggest improvements.
- Evaluating how effective the chosen materials were in fulfilling the design brief.
- Evaluating structures made by the class.

Additional

- To know form is the look and shape of something.
- To know function is what something does and how it works.
- To know that creating accurate shapes improves how they look and sometimes their function.
- To know choices of materials and equipment can affect the final product.
- 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.

- Describing what characteristics of a design and construction made it the most effective.
- Considering effective and ineffective designs.

Year 5

Design

- Designing a stable structure that is able to support weight.
- Creating a frame structure with a focus on triangulation.
- Make
- Making a range of different shaped beam bridges.
- Using triangles to create truss bridges that span a given distance and support a load.
- Building a wooden bridge structure.
- Independently measuring and marking wood accurately.
- Selecting appropriate tools and equipment for particular tasks.
- Using the correct techniques to saw safely.
- Identifying where a structure needs reinforcement and using card corners for support.
- Explaining why selecting appropriating materials is an important part of the design process.
- Understanding basic wood functional properties.

Evaluate

- Adapting and improving own bridge structure by identifying points of weakness and reinforcing them as necessary.

Technical

- To understand some different ways to reinforce structures.
- To understand how triangles can be used to reinforce bridges.
- To know that properties are words that describe the form and function of materials.
- To understand why material selection is important based on properties.
- To understand the material (functional and aesthetic) properties of wood.

Additional

- To understand the difference between arch, beam, truss and suspension bridges.
- To understand how to carry and use a saw safely.

- Suggesting points for improvements for own bridges and those designed by others.

Year 6

Design

- Designing a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs.
- Identifying more complex problem statements that consider multiple factors and constraints with guidance.
- Developing more independence in generating ideas.
- Coming up with a broader range of ideas and deeper innovation, requiring pupils to think critically about their ideas' practicality and originality.
- Using 3D CAD software to communicate their ideas.
- Using a series of prototypes to refine and improve their designs.

Make

- 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.

Technical

- To know that structures can be strengthened by manipulating materials and shapes.
- Understanding how to reinforce structures to make them more stable.
- Using triangulation to strengthen or stabilise a structure.
- To know that constraints are limits or conditions when making a product.
- To know that the environmental impact is how the product and making the product might affect the environment.
- To know that original and innovative ideas are different from what has been made before.
- To know drawings and diagrams can be communicated in 3D.
- To know that annotations are detailed labels and comments on diagrams.
- To know that improving on prototypes can help to improve the final design.
- To know that materials and equipment lists help with planning.
- To know aesthetics are the way something looks.
- To know that risks are things that might go wrong.
- To know the shape of an object can affect both its aesthetics and function.
- To know aesthetics is how something looks.

- Producing lists of equipment, materials and tools that they need for a task.
- Selecting materials, components or ingredients based on research or user needs.
- Assessing risks associated with different tools and equipment.
- Understanding and explaining the importance of each safety rule.
- Consistently apply safety instructions.
- Using a ruler to accurately measure and draw lines and marks.
- In small groups, cutting harder wood with a saw.
- Cutting in a back-and-forth sawing motion where appropriate.
- Balancing aesthetics and functionality when creating parts of a design.
- Considering when best to apply finishing effects.

Evaluate

- 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.
- Reflecting on the usability, aesthetics, innovation and sustainability of products and discussing how design choices impact these aspects.
- Assessing their designs against a more complex set of design criteria that includes functionality,

- To know that the finish can make a product suitable to be used outside.

Additional

- 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.
- To know that sustainability means thinking about the materials that were used to make a product and how the product was made.
- To know that their final product can still be improved by using different materials or techniques.
- To know that evaluating their designs in detail will help them understand its successful and less successful parts.
- To know that a frame structure supports or holds a shape, and is made up of strong parts joined together, like a skeleton or a climbing frame.
- To know how to reinforce structures.
- To know triangles can be used to reinforce structures.
- To know triangles can create strong and stable structures.
- To know that bracing is a way of reinforcing a structure.
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aesthetics, user experience, sustainability and cost.

- Considering alternative materials, tools or techniques that could enhance the product.

National Curriculum – End of KS2

- use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups
- generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design
- select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing), accurately
- select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities
- investigate and analyse a range of existing products
- evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- understand how key events and individuals in design and technology have helped shape the world
- apply their understanding of how to strengthen, stiffen and reinforce more complex structures
- understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages)
- understand and use electrical systems in their products (for example, series circuits incorporating switches, bulbs, buzzers and motors)
- apply their understanding of computing to program, monitor and control their products.
- understand and apply the principles of a healthy and varied diet
- prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques
- understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.