

DT - Progression of Skills & knowledge

DESIGN

EYFS

Reception

Skills

- Making verbal plans and material choices.
- Developing a junk model.
- Designing a junk model boat.
- Using knowledge from exploration to inform design.
- Discussing what a good design needs.
- Designing a simple pattern with paper.
- Designing a bookmark.
- Choosing from available materials.

KS1

Year 1

Skills

Identifying needs and problems

- Thinking about what others might want from a design.
- Beginning to recognise how products and designs in the world around us solve certain needs.

Developing for a user

- Considering who they are designing for - identifying the user.
- Stating what they intend to make and why - identifying the purpose.

Generating ideas

- Talking about ideas, with purpose and user in mind.
- Talking about existing products when generating ideas.

Communicating ideas

- Using basic drawing skills to communicate ideas.

Knowledge

Identifying needs and problems

- To know that different users may want different things from a design.
- To know that the 'user' is the person who will use the product.
- To know that designers usually design and make something to solve a problem.

Developing for a user

- 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.

Generating ideas

- To know that existing products can help when deciding what to design.

Communicating ideas

- To know that drawings are a way to explain ideas.

Year 2

Skills

Developing for a user

- Using a simple design brief that outlines the intended use, target user and key features of the product, to create simple design criteria.

Generating ideas

- Creating ideas with design criteria in mind.
- Referring to specific parts of existing products when generating ideas.

Communicating ideas

- Making a series of drawings to show how something works.
- Using labels to explain parts of a design, label materials etc, including using ICT.
- Integrating moving parts when creating mock-ups.

Knowledge

Developing for a user

- 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.

Generating ideas

- To know that the design criteria help when thinking of ideas.
- To know that different products work in different ways and have parts that make them work.

Communicating ideas

- To know that drawings can help explain how something works.
- To know that a label explains part of a drawing.

KS2

Year 3/4

Skills

Identifying needs and problems

- Noticing simple problems or needs in their everyday life.
- Using empathy and conducting simple surveys to recognise the needs of others.

Developing for a user

- Creating simple design criteria that outline basic functionality and appeal to individual users or target audiences.

Generating ideas

- Taking part in structured idea-generation sessions.
- Coming up with more ideas and considering the feasibility of their ideas in the classroom.

Communicating ideas

- Beginning to use 2D CAD software to communicate their ideas.
- Developing drawing and sketching skills with a focus on clarity and simplicity.
- Developing designs by adding detail and justifications about materials, tools, methods.
- Beginning to recognise the benefit of a range of diagram types or prototypes to communicate ideas. (eg. sketches, cross-sectional diagram, thumbnail sketches and exploded diagrams).
- Creating prototypes using materials with similar properties to their final design.

Knowledge

Identifying needs and problems

- To know that a problem or need is something that a designer can help to solve.

Developing for a user

- To know that a target audience is a group of people that might like the idea.

Generating ideas

- To know that thinking together can help generate ideas.
- To know that not everything can be made in the classroom.

Communicating ideas

- To know that CAD is computer-aided design.
- To know that CAD can be used to better communicate ideas.
- To know that extra information on drawings or diagrams can help the user understand a design or idea.
- To know that thumbnail sketches are less detailed quick sketches.
- To know that a cross-sectional diagram shows the inside of a product.
- To know that an exploded diagram shows how the parts of a product fit together.
- To know that a prototype is a detailed model that helps a user understand how a product will work.

Year 5/6

Skills

Identifying needs and problems

- Noticing wider-reaching problems or needs in the community.
- Identifying a wide range of needs and potential barriers through market research.
- Identifying more complex problems that consider multiple factors and constraints with guidance.

Developing for a user

- Creating more complex design criteria that require considering detailed user needs, environmental impact, materials and cost.

Generating ideas

- 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.

Communicating ideas

- Using 3D CAD software to communicate their ideas.
- Beginning to use more complex annotated sketches, such as cross-sectional and exploded diagrams and pattern pieces in design.
- Using a series of prototypes to refine and improve their designs.

Knowledge

Identifying needs and problems

- To know that problems can be large and small.
- To know that market research is a way of collecting information about problems or needs.
- To know that a constraint is a limit or condition when making a product.

Developing for a user

- To know that environmental impact is how the product and making the product might affect the environment.
- To know that different materials have different costs.

Generating ideas

- To know that original and innovative ideas are different from what has been made before.

Communicating ideas

- To know that 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.

MAKE

EYFS

Reception

Skills

- 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.
- Exploring fine motor/threading and weaving (under, over technique) with a variety of materials.
- Using a prepared needle and wool to practise threading.

KS1

Year 1

Skills

Planning

- Planning more than one step ahead.

Selecting materials

- Choosing between a small number of materials, ingredients or components.
- Explaining their choices based on personal experiences.

Selecting equipment

- Requesting equipment appropriate to the purpose (e.g. scissors for cutting, glue for joining).

Tool safety

- Explaining in simple terms why certain tools must be handled carefully.
- Following and recalling simple safety instructions.

Tool use

- Marking and measuring: Measuring, marking and spacing materials accurately using simple tools and by identifying midpoints.
- Cutting: Cutting straight and spaced lines, larger shapes and simple holes safely and with control.
- Joining: Joining materials using glue, tape or simple stitching.
- Shaping: Using simple tools to shape materials by cutting and forming.
- Finishing: Finishing products using controlled colouring and simple textures.

Knowledge

Selecting materials

- To know that choosing different materials or components will have an effect on what their product does or looks like.

Tool safety

- To know that some tools are sharp, such as scissors and knives.
- To know that following instructions means using tools safely.

Tool use

- Marking and measuring: To know that straight lines, equal spacing and finding the middle of an object help to make products more accurate.
- Cutting: To know that different tools and techniques are used to cut materials and soft foods safely and accurately.
- Joining: To know that materials can be joined in different ways to create a secure and neat finish.
- Shaping: To know that tools are used to change the shape of different materials.
- Finishing: To know that texture and careful colouring improve how a product looks and feels.

Year 2

Skills

Planning

- Planning more than one step ahead.

Selecting materials

- 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.

Selecting equipment

- Selecting from a wider range of equipment some of which are used for the same purpose (e.g. joining by sewing instead of glue).

Tool safety

- Explaining in simple terms why certain tools must be handled carefully.
- Following and recalling simple safety instructions.

Tool use

- Marking and measuring: Measuring, marking and spacing lines of a given length using simple tools.
- Cutting: Cutting a range of materials with improving control by adjusting grip and positioning the material carefully.

- Joining: Joining materials by aligning edges carefully and applying glue or stitches neatly and evenly.
- Shaping: Using templates and known shapes to create and adapt forms for a purpose.
- Finishing: Applying consistent brush/pen/pencil strokes to create balance in their finishing.

Knowledge

Planning

- To know that a plan is deciding what to do first and next.

Selecting materials

- To know some properties of materials like hard, soft, flexible, waterproof, strong etc.

Selecting equipment

- To know that some pieces of equipment are better suited to certain jobs.

Tool safety

- To know that some tools are sharp like scissors and knives.
- To know that following instructions means using tools safely.

Tool use

- Marking and measuring: To know that length can be measured and marked to improve the accuracy of products.
- Cutting: To know that changing grip and how a material is held can make cutting safer and more accurate.
- Joining: To know that careful alignment and neat application make a join stronger and tidier.
- Shaping: To know that templates and geometric shapes can help create accurate forms that improve how a product works.
- Finishing: To know that balanced and consistent finishing improves the overall appearance of their product.

KS2

Year 3/4

Skills

Planning

- Ordering the main stages of making into a plan.

Selecting materials

- Selecting materials, components or ingredients from a wider choice but within a limited design space (e.g. seasonal ingredients from May and June in the UK).
- Selecting materials, components or ingredients based on their form as well as their functional properties.
- Explaining their choices with regard to function and form.

Selecting equipment

- Selecting equipment required for a series of tasks based on the plan. Explain why each piece is suitable for each stage.

Tool safety

- Suggesting simple safety rules based on their understanding of tool dangers.
- Participating in discussions about classroom safety procedures.
- Following detailed safety instructions.

Tool use

- Marking and measuring: Using a ruler accurately to measure and mark straight lines.
- Cutting: Cutting more complex shapes and a wider range of materials and foods accurately and safely (e.g. using a bridge or claw hold when chopping foods).
- Joining: Joining materials securely by selecting and applying appropriate joining methods for the material and purpose.
- Shaping: Creating and refining accurate 2D and 3D shapes to suit the function of a product.

- Finishing: Applying precise and varied finishing techniques to enhance appearance and surface quality.

Knowledge

Planning

- To know that ordering the steps of a build can make it easier.

Selecting materials

- To know that form is the look and shape of something.
- To know that function is what something does and how it works.

Selecting equipment

- To know that different pieces of equipment will be used at different stages in a plan.

Tool safety

- To know that different tools and equipment have different dangers.

Tool use

- Marking and measuring: To know that a ruler is used to measure and mark length precisely.
- Cutting: To know that different tools and techniques are suited to specific materials and levels of resistance.
- Joining: To know that stronger and long lasting joins may be needed depending on the materials and how the product will be used.
- Shaping: To know that accurate shaping and refining of 2D and 3D forms improves appearance and performance.
- Finishing: To know that finishing techniques can improve both the look and performance of a product.

Year 5/6

Skills

Planning

- Producing lists of equipment, materials and tools that they need for a task.

- Creating a step-by-step plan for making.

Selecting materials

- Selecting materials, components or ingredients based on research or user needs.
- Explaining their choices, referring to their research.

Selecting equipment

- Considering which equipment will work well together.
- Choosing from the known range of equipment available to them with little guidance.

Tool safety

- Assessing risks associated with different tools and equipment.
- Understanding and explaining the importance of each safety rule.
- Consistently apply safety instructions.

Tool use

- Marking and measuring: Measuring and marking to a greater degree of accuracy to support more complex designs and components.
- Cutting: Using appropriate cutting tools and techniques to achieve accurate and aesthetic cuts.
- Joining: Selecting and applying joining methods to create strong, durable and well-finished products.
- Shaping: Shaping and refining materials and components to balance aesthetics and functionality.
- Finishing: Selecting and applying finishes to enhance appearance and protect the product.

Knowledge

Planning

- To know that materials and equipment lists help to plan better.

Selecting materials

- To know that aesthetics are the way something looks.
- To know that research can help decide on form and function.

Selecting equipment

- To know that some equipment can work well with other equipment.

Tool safety

- To know that risks are things that might go wrong.

Tool use

- Marking and measuring: To know that precise measuring and marking are essential for parts to fit and function correctly.
- Cutting: To know that precision in cutting affects how well parts fit, function and look.
- Joining: To know that joins may need reinforcement or adjustment to improve strength and stability.
- Shaping: To know that the form of a product influences how it looks, feels and performs.
- Finishing: To know that finishes can improve durability, protect materials and make products suitable for different uses or environments.

EVALUATE

EYFS

Reception

Skills

- 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.
- 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 how the shape and structure of a boat affect the way it moves.

KS1

Year 1

Skills

Evaluating existing products

- Discussing existing products, saying what they like about them.
- Comparing two products and discuss which is better for a specific purpose.

Evaluating own ideas and products

- Discussing how their products could be improved based on personal preferences.
- Comparing their finished products with their original designs.

Giving and receiving feedback

- Saying what they like about their peers' designs and products.
- Accepting feedback and understanding it is meant to improve their work.

Knowledge

Evaluating existing products

- To know that some products will be better than others.

Evaluating own ideas and products

- To know that their ideas or products can be made better.
- To know that their final product might be different to their original idea.

Giving and receiving feedback

- To know that their ideas can make someone else's work better.
- To know that other people's ideas can help make their work better.

Year 2

Skills

Evaluating existing products

- Discussing a range of existing products and saying what they like and dislike about them.
- Comparing a range of products and explaining why some better meet different design criteria than others.

Evaluating own ideas and products

- Evaluating their ideas and creations against simple design criteria.
- Discussing whether they were able to use the tools and techniques effectively.

Giving and receiving feedback

- Suggesting improvements to their peers' designs and products.

Knowledge

Evaluating existing products

- To know that existing products can be evaluated against design criteria.

Evaluating own ideas and products

- To know that design criteria help to decide if their product is a success.
- To know what different tools and equipment do.

Giving and receiving feedback

- To know that improve means to make something better.
- To know that their suggestions can improve someone else's work.

KS2

Year 3/4

Skills

Evaluating existing products

- Investigating and analysing a range of existing products by looking at their functionality and appeal.
- Analysing why specific products, designers or inventors are successful.

Evaluating own ideas and products

- Evaluating their designs by comparing them against design criteria and considering feedback from peers to suggest improvements.
- Evaluating how effective their chosen materials and tools were in fulfilling the design brief.

Giving and receiving feedback

- Explaining why they think certain aspects of a peer's design are effective or why they suggested specific improvements.
- Reflecting on feedback to decide if and how it could be used to improve future iterations.

Knowledge

Evaluating existing products

- To know that some products are more successful than other because of their function.
- To know that designers and inventors create products.

Evaluating own ideas and products

- To know that choices of materials and equipment can affect the final product.
- To know that feedback is ideas and suggestions from other people that can help improve their work.

Giving and receiving feedback

- To know that the better the suggestions the better the feedback.
- To know that they can choose to use feedback or not.

Year 5/6

Skills

Evaluating existing products

- Reflecting on the usability, aesthetics, innovation and sustainability of products and discussing how design choices impact these aspects.
- Evaluating the work of a range of designers to help inform their designs.

Evaluating own ideas and products

- Assessing their designs against a more complex set of design criteria that includes functionality, aesthetics, user experience, sustainability and cost.
- Considering alternative materials, tools or techniques that could enhance the product.

Giving and receiving feedback

- Providing feedback that is helpful, specific, and encouraging.
- Incorporating feedback from peers or users improve their product further, explaining the changes they made and the impact they had.

Knowledge

Evaluating existing products

- 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 looking at other designers work can help inform designs.

Evaluating own ideas and products

- To know that their final product can still be improved by different materials or techniques.
- To know that evaluating their designs in detail will help them understand its successful and less successful parts.

Giving and receiving feedback

- To know that feedback should be positive, helpful and specific.
- To know that explaining how they used feedback to improve their design can help them create better products in the future.