Progression of Teaching and Learning in Design and Technology

Opportunities (N/C)

EYFS	KS1	KS2	KS3/ Challenge
Physical Development ELG Use a range of small tools, including scissors, paintbrushes and cutlery. **Expressive Arts and Design ELG** • Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form, and function • Share their creations, explaining the process they have used • Make use of props and materials when role playing characters in narratives and stories.	Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts, such as the home and school, gardens and playgrounds, the local community, industry and the wider environment. When designing and making, pupils should be taught to: Design • 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. Make • select from and use a range of tools and equipment to perform practical tasks such as cutting, shaping, joining and finishing. • select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. Evaluate • explore and evaluate a range of existing products. • evaluate their ideas and products against design criteria. Technical knowledge • build structures, exploring how they can be made stronger, stiffer and more stable. • explore and use mechanisms, such as levers, sliders, wheels and axles, in their products. Cooking and nutrition • use the basic principles of a healthy and varied diet to prepare dishes. • understand where food comes from.	Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment. When designing and making, pupils should be taught to: **Design** • 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. **Make** • select from and use a wider range of tools and equipment to perform practical tasks, such as 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. **Evaluate** • 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 **Technical knowledge** • apply their understanding of how to strengthen, stiffen and reinforce more complex structures. • understand and use mechanical systems in their products, such as gears, pulleys, cams, levers and linkages. • understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs, buzzers and motors. • apply their understanding of computing to programme, monitor and control their products. **Cooking and nutrition** • 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.	Work in a number of fields including: • materials (including textiles) • horticulture • electricals and electronics • construction • mechanics • cooking • emerging areas of design and technology (such as food design, design for disability, and age-related design). Mastering practical skills • Increase skills, knowledge and competence in using materials, machinery, technique and processes. • Complete common practical, diagnostic, repair and maintenance tasks and multi-stage processes. • Develop well-conceived and well-executed practical solutions. • Select and use complex tools, equipment, machinery and techniques skilfully. • Develop sophisticated practical skills and carry out diagnostic, repair and maintenance tasks in a range of contexts. • Explore materials and technological developments, and experiment with using them. • Understand the importance of nutrition, a balanced diet and about the characteristics of a broad range of ingredients in choosing and preparing food. • Cook a repertoire of savoury meals and become confident in a range of cooking techniques. Designing, making, evaluating and improving • Plan, design, make and evaluate a range of quality products, in a variety of materials that are fit for purpose. • Communicate ideas and designs skilfully and accurately in 2D and 3D, using a variety of techniques, including computing, taking inspiration from design throughout history • Analyse the work of others, including iconic designs, to inform work. • Use historical and contextual references to influence and improve work. • Understand developments in design and technology and the responsibilities of designers, including environmental responsibilities.

Milestones

This table demonstrates which statements from the 2020 Development Matters are prerequisite skills for DT within the national curriculum. The table below outlines the most relevant statements taken from the Early Learning Goals in the EYFS statutory framework and the Development Matters age ranges for Three and Four-Year-Olds and Reception to match the programme of study for DT. The most relevant statements for DT are taken from the following areas of learning: Physical Development & Expressive Arts and Design

EYFS			
Three and Four-Year-Olds	Personal, Social and Emotional Development		• Select and use activities and resources, with help when needed. This helps them to achieve a goal they have chosen or one which is suggested to them.
	Physical Development		• Use large-muscle movements to wave flags and streamers, paint and make marks. • Choose the right resources to carry out their own plan. • Use one-handed tools and equipment, for example, making snips in paper with scissors.
	Understanding the World		• Explore how things work.
	Expressive Arts and Design		• Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park. • Explore different materials freely, in order to develop their ideas about how to use them and what to make. • Develop their own ideas and then decide which materials to use to express them. • Create closed shapes with continuous lines, and begin to use these shapes to represent objects.
Reception	Physical Development		• Progress towards a more fluent style of moving, with developing control and grace. • Develop their small motor skills so that they can use a range of tools competently, safely and confidently. • Use their core muscle strength to achieve a good posture when sitting at a table or sitting on the floor.
	Expressive Arts and Design		• Explore, use and refine a variety of artistic effects to express their ideas and feelings. • Return to and build on their previous learning, refining ideas and developing their ability to represent them. • Create collaboratively, sharing ideas, resources and skills.
ELG	Physical Development	Fine Motor Skills	• Use a range of small tools, including scissors, paintbrushes and cutlery.
	Expressive Arts and Design	Creating with Materials	• Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. • Share their creations, explaining the process they have used.

Learning Objectives

To master practical skills
To design, make, evaluate and improve
To take inspiration from design throughout history

Milestones

	YEAR 1					YEAR 2				
Objectives	**Overview of Essential Knowledge and Skills**		**Emerging**	**Developing**	**Secure**	**Overview of Essential Knowledge and Skills**		**Emerging**	**Developing**	**Secure**
To master practical skills	Food	• Cut, peel or grate ingredients safely and hygienically. • Measure or weigh using measuring cups or electronic scales. • Assemble or cook ingredients.	Children can identify a peeler and explain what it does. With support children can use it to cut, peel or grate ingredients safely and hygienically. Children understand that ingredients need to be measured to follow a recipe.	Children can identify a peeler and grater. They can begin to cut, peel or grate ingredients with adult support. They can also use measuring cups to measure out a quantity. This may not be accurate.	Children can select the correct implement to peel or grate ingredients safely. Children can explain why is it important to wash their hands before touching food or equipment. They can measure or weigh using measuring cups with increasing accuracy.	Food	• Cut, peel or grate ingredients safely and hygienically. • Measure or weigh using measuring cups or electronic scales. • Assemble or cook ingredients.	**With support children can:** Cut, peel or grate ingredients safely and hygienically. Measure or weigh using measuring cups or electronic scales with some accuracy. Assemble or cook ingredients.	**Children can independently:** Cut, peel or grate ingredients safely and hygienically. Measure or weigh using measuring cups or electronic scales with some accuracy. Assemble or cook ingredients (some adult support maybe required).	**Children can confidently:** Cut, peel or grate ingredients safely and hygienically, explaining why this is important. Measure or weigh using measuring cups or electronic scales accurately. Assemble or cook ingredients (some adult support maybe required).
	Materials	• Cut materials safely using tools provided. • Measure and mark out to the nearest centimetre. • Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling). • Demonstrate a range of joining techniques (such as gluing, hinges or combining materials to strengthen).	With adult support children can cut materials safely and with increasing accuracy using appropriate tools, often self-selected. Measure and mark out materials using a ruler or tape measure. Children can demonstrate a range of cutting and shaping techniques including tearing, cutting, folding and curling with increasing accuracy. Children can are beginning to understand that joins can be strengthened by a range of joining techniques including gluing and hinging.	With minimal support children can cut materials safely and with increasing accuracy using appropriate tools, often self-selected. Measure and mark out materials to a set amount in cms. Children can demonstrate a range of cutting and shaping techniques including tearing, cutting, folding and curling with increasing accuracy. Children can are beginning to understand that joins can be strengthened by a range of joining techniques including gluing and hinging.	Children can cut materials safely and with increasing accuracy using appropriate tools, often self-selected. Measure and mark out materials to a set amount in cms. Children can demonstrate a range of cutting and shaping techniques including tearing, cutting, folding and curling accurately. Children can are beginning to understand that joins can be strengthened by a range of joining techniques including gluing and hinging.	Materials Unobtrusively	• Cut materials safely using tools provided. • Measure and mark out to the nearest centimetre. • Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling). • Demonstrate a range of joining techniques (such as gluing, hinges or combining materials to strengthen).	**With support children can:** Cut materials safely and with increasing accuracy using appropriate tools, often self-selected. Measure and mark out to the nearest centimetre accurately, explaining the purpose. Demonstrate a range of cutting and shaping techniques including tearing, cutting, folding and curling accurately. Demonstrate a range of joining techniques including gluing, hinges or combining materials to strengthen.	**Children can independently:** Cut materials safely and with increasing accuracy using appropriate tools self-selected. Measure and mark out to the nearest centimetre accurately and for a purpose. Demonstrate a range of cutting and shaping techniques including tearing, cutting, folding and curling. Demonstrate a range of joining techniques including gluing, hinges or combining materials to strengthen.	**Children can confidently:** Cut materials safely and accurately using appropriate tools self-selected. Measure and mark out to the nearest centimetre accurately and for a purpose. Demonstrate a range of cutting and shaping techniques including tearing, cutting, folding and curling. Demonstrate a range of joining techniques including gluing, hinges or combining materials to strengthen
	Textiles	• Shape textiles using templates. • Join textiles using running stitch. • Colour and decorate textiles	Children are beginning to hold scissors correctly and can transport them safely. Children can use a pre-threaded needle	Children are beginning to shape textiles using templates, holding and transporting scissors safely.	Shape textiles using templates, holding and transporting scissors safely. With some support children can join	Textiles	• Shape textiles using templates. • Join textiles using running stitch. • Colour and decorate textiles	**With support children can:** Shape textiles using templates, holding and transporting scissors safely.	**Children can independently:** Shape textiles using templates, holding and transporting scissors safely.	**Children can confidently:** Shape textiles using templates, holding and transporting scissors safely.

		using a number of techniques (such as dyeing, adding sequins or printing).	to join textiles with adult support. Children can select decorations to colour textiles.	With support children can join textiles using a simple stitch such as running, and can ask an adult to tie a knot when necessary. With increasing accuracy children can colour and decorate textiles using a number of techniques.	textiles using a simple stitch such as running threading the needle and beginning to tie a knot independently. Colour and decorate textiles using a number of techniques.		using a number of techniques (such as dyeing, adding sequins or printing).	Children can join textiles using running stitch, threading the needle and beginning to tie a knot independently. Colour and decorate textiles using a number of techniques.	With some support children can join textiles using running stitch, threading the needle and beginning to tie a knot independently. Colour and decorate textiles using a number of techniques.	Join textiles using running stitch, threading the needle and tying a knot independently. Colour and decorate textiles using a number of techniques (such as dyeing, adding sequins or printing).
	Electricals and electronics	• Diagnose faults in battery operated devices (such as low battery, water damage or battery terminal damage).	With support, children can insert batteries correctly with limited help, often matching the + and – poles accurately. Children can confirm if a battery is running low on energy. With support they can use electrical equipment to test a batteries power, not always accurately.	With support, children can insert batteries correctly with limited help, often matching the + and – poles accurately. Children can confirm if a battery is running low on energy. With support they can use electrical equipment to test a batteries power.	Children can insert batteries correctly with limited help, often matching the + and – poles accurately. Children can confirm if a battery is running low on energy. With support they can use electrical equipment to test a batteries power.	Electricals and electronics	• Diagnose faults in battery operated devices (such as low battery, water damage or battery terminal damage).	**With support children can:** Insert batteries correctly, often matching the + and – poles accurately. With increasing accuracy children can diagnose faults in battery operated devices such as low battery, water damage or battery terminal damage by using electrical testing equipment where necessary.	**Children can independently:** Insert batteries correctly, often matching the + and – poles accurately. With increasing accuracy children can diagnose faults in battery operated devices such as low battery, water damage or battery terminal damage by using electrical testing equipment where necessary.	**Children can confidently:** Insert batteries correctly, matching the + and – poles accurately. Diagnose faults in battery operated devices such as low battery, water damage or battery terminal damage by using electrical testing equipment where necessary.
	Computing	• Model designs using software.	Model designs using CAD (computer aided design) software. With support they can log on and select correct icon. With help, they are able to use a mouse to create a design. This may not be to scale.	Model designs using CAD (computer aided design) software. They should be able to log on independently, and select the correct dimensions/specifications to produce a model or design that is the correct scale, and is fit for purpose.	Model designs using CAD (computer aided design) software. They should be able to log on independently, and select the correct dimensions/specifications to produce a model or design that is the correct scale, and is fit for purpose.	Computing	• Model designs using software.	**With support children can:** Model designs using KS 1 CAD (computer aided design) software. They should be able to log on independently, and begin to select the correct dimensions/specifications to produce a model or design.	**Children can independently:** Model designs using CAD (computer aided design) software. They should be able to log on independently, and begin to select the correct dimensions/specifications to produce a model or design.	**Children can confidently:** Model designs using CAD (computer aided design) software. They should be able to log on independently, and select the correct dimensions/specifications to produce a model or design that is the correct scale, and is fit for purpose.
	Construction	• Use materials to practise drilling, screwing, gluing and nailing materials to make and strengthen products	With an adult children are beginning to use glue to practise attaching materials to make and strengthen products. These are used safely but not always accurately.	With an adult children can use glue and junior hacksaws to practise attaching materials to make and strengthen products. These are used safely but not always accurately.	With support, children can use drills, saws table clamps, and glue guns to practise drilling, screwing, gluing and nailing materials to make and strengthen products. These are used safely and with increased accuracy.	Construction	• Use materials to practise drilling, screwing, gluing and nailing materials to make and strengthen products	**With support children can:** Use drills, saws table clamps, and glue guns to practise drilling, screwing, gluing and nailing materials to make and strengthen products. These are used safely with support.	**Children can independently:** Use drills, saws table clamps, and glue guns to practise drilling, screwing, gluing and nailing materials to make and strengthen products. These are used safely and with increased accuracy. Children can explain that materials can be strengthened when attached a particular way.	**Children can confidently:** Use drills, saws table clamps, and glue guns to practise drilling, screwing, gluing and nailing materials to make and strengthen products. These are used safely and accurately. Children are beginning to understand that a pyramid or cube model has structural integrity.

	Mechanics	• Create products using levers, wheels and winding mechanisms.	Children are beginning to explain what a lever is using simple language, and can find levers in everyday objects. With support, they can make their own simple lever.	Children are beginning to explain what a lever is, and can draw a diagram of one. They can name objects that use levers, and can make their own lever for a purpose with support.	Children can explain what a lever is, and can draw a diagram of one. They can name objects that use levers, and can make their own lever for a purpose with minimal support. Children can also produce a simple winding mechanisms.	Mechanics	• Create products using levers, wheels and winding mechanisms.	**With support children can:** Children can explain a lever with emerging technical language. They can name objects that use levers, and can make their own lever for a purpose. Children can also produce a simple winding mechanisms.	**Children can independently:** Children can explain a lever using technical language. They can name objects that use levers, and can confidently make their own lever for a purpose. Children can also produce a simple winding mechanisms, suggesting equipment and apparatus needed.	Children can confidently explain a lever using technical language. They can name objects that use levers, and can confidently make their own lever for a purpose. Children can also produce a simple winding mechanisms, suggesting equipment and apparatus needed.
To design, make, evaluate and improve	• Design products that have a clear purpose and an intended user.		Children are beginning to understand that DT produces something for a set reason. They can make simple observations between different media / materials, sometimes commenting which would be best for a purpose, e.g. a thick material will keep something warm.	Children understand that DT produces something for a set reason. They can make simple observations between different media / materials, sometimes commenting which would be best for a purpose, e.g. a thick material will keep something warm, plastic could stop the rain.	Children understand that DT produces something for a set reason. They can begin to think about the intended user to discover the best material, e.g. which fabric is best for a shopping bag? Children are beginning to list and incorporate the user's preferences into their designs, some of which may not always be accurate.	• Design products that have a clear purpose and an intended user.		**With support children can:** Explain that DT produces items created for a specific purpose. They can begin to think about the intended user to discover the best material, e.g. which fabric is best for a shopping bag? Children are also able to list and incorporate the user's preferences into their designs.	**Children can independently:** Children can confidently explain that DT produces items created for a specific purpose. They can think about the intended user, and carry out feasibility tests (still maybe supported) to discover the best material, e.g. which fabric is best for a shopping bag? Children are also able to list and incorporate the user's preferences into their designs.	Children can confidently explain that DT produces items created for a specific purpose. They can think about the intended user, and carry out feasibility tests (still maybe supported) to discover the best material, e.g. which fabric is best for a shopping bag? Children are also able to list and incorporate the user's preferences into their designs.
	• Make products, refining the design as work progresses.		With support children are able to change their design when creating it, sometimes explaining why they are doing it. These changes may improve the completed design.	With increasing independence children are able to change their design when creating it, sometimes explaining why they are doing it. These changes can often improve the design.	With increasing independence children are able to change their design when creating it, sometimes explaining why they are doing it.	• Make products, refining the design as work progresses.		**With support children can:** Adapt and change their design when creating it, sometimes explaining why they are doing it. They may refer back to their design and the brief, or talk about the users preferences.	**Children can independently:** Adapt and change their design when creating it, explaining why they are doing it. They may refer back to their design and the brief, or talk about the users preferences.	**Children can confidently:** Adapt and change their design when creating it, explaining why they are doing it. They may refer back to their design and the brief, or talk about the users preferences.
	• Use software to design		Children are aware they can use a computer to create a design. With adult support they can log on and select the correct software icon. They are able to use the left hand button of a mouse to click on links.	Children are beginning to model designs using CAD (computer aided design) software. With support they are able to log on independently, and select the correct piece of software. They are able to use the left hand button of a mouse to click on links.	Children are beginning to model designs using CAD (computer aided design) software. With minimal support they are able to log on independently, and select the correct piece of software. With some support they can select from the correct options or drop down menus to produce a model or design.	• Use software to design		**With support children can:** Model designs using CAD (computer aided design) software. They should be able to log on independently, and begin to select the correct dimensions/specifications to produce a model or design that is the correct scale. With support, children can alter and adapt deigns, sometimes to fit the brief.	**Children can independently:** Model designs using CAD (computer aided design) software. They should be able to log on independently, and select the correct dimensions/specifications to produce a model or design that is the correct scale. With support, children can alter and adapt deigns for fit the brief.	**Children can confidently:** Model designs using CAD (computer aided design) software. They should be able to log on independently, and select the correct dimensions/specifications to produce a model or design that is the correct scale, and is fit for purpose. Children may begin to alter and adapt deigns for fit the brief.

To take inspiration from design throughout history	• Explore objects and designs to identify likes and dislikes of the designs.	Children can look at a design and say if they like it or not, sometimes giving a reason why. With support they can look similar designs and say what is the same or different.	Children can look at a design and say if they like it or not, usually giving a reason why. With support they can look similar designs and say what is the same or different.	Children can look at a design and say if they like it or not, beginning to use design vocabulary. They can compare it to similar designs and say what is the same or different.	• Explore objects and designs to identify likes and dislikes of the designs.	**With support children can:** Look at a design and say if they like it or not, beginning to use design vocabulary and processes. They are able to refer back to the purpose of it.	**Children can independently:** Look at a design and say if they like it or not, beginning to use design vocabulary and processes. They are able to refer back to the purpose of it.	**Children can confidently:** Look at a design and say if they like it or not, using design vocabulary and processes. They are able to refer back to the purpose of it.
	• Suggest improvements to existing designs.	Children are beginning to look at their final design and explain if it works (or is fit for purpose). When prompted they are able to describe simple changes they could make. These do not always help the functionality of the design, e.g. change the colour of the door.	Children are able to look at their final design and explain if it works (or is fit for purpose). When prompted they are able to describe simple changes they could make, for example change the size / material. These changes may help the practicality of it.	Children are able to look at their final design and explain if it works (or is fit for purpose). They are able to describe simple changes they could make, for example change the size / material. These changes may help the practicality of it.	• Suggest improvements to existing designs.	**With support children can:** Suggest ways a design could be improved, e.g. changing it to a waterproof material or changing the size. They should be beginning to refer to the design specifications and purpose.	**Children can independently:** Suggest ways a design could be improved, e.g. changing it to a waterproof material or changing the size. They should be beginning to refer to the design specifications and purpose, although this may be supported.	**Children can confidently:** Suggest ways a design could be improved, e.g. changing it to a waterproof material or changing the size. They should be beginning to refer to the design specifications and purpose.
	• Explore how products have been created.	With adult support are able to examine objects and designs, e.g. a bag, and comment on the material / pattern used. They can find the stitches and/ or joins in a design.	Children are able to examine objects and designs, e.g. a bag, and comment on the material / pattern used. They are beginning to look at the joints/ stitches/ joints etc. used to created its structure.	Children are able to examine objects and designs, e.g. a bag, and comment on the material / pattern used. They are able to look at the joints/ stitches/ joints etc. used to created its structure.	• Explore how products have been created.	**With support children can:** Examine objects and designs, e.g. a bag, and dissemble it, observing how it is made including the joints/stitches/joins etc.	**Children can independently:** Examine objects and designs, e.g. a bag, and dissemble it, observing how it is made including the joints/stitches/joins etc.	**Children can confidently:** Examine objects and designs, e.g. a bag, and dissemble it, observing how it is made including the joints/stitches/joins etc.

Milestones

	YEAR 3					YEAR 4				
Objectives	**Overview of Essential Knowledge and Skills**		**Emerging**	**Developing**	**Secure**	**Overview of Essential Knowledge and Skills**		**Emerging**	**Developing**	**Secure**
To master practical skills	Food	• Prepare ingredients hygienically using appropriate utensils. • Measure ingredients to the nearest gram accurately. • Follow a recipe. • Assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking).	Children can cut, peel or grate ingredients safely and hygienically, explaining why this is important. Measure or weigh using measuring cups or electronic scales accurately. Assemble or cook ingredients (some adult support maybe required).	Children can cut, peel or grate ingredients safely and hygienically, explaining why this is important (adult supervision is required). They can measure or weigh using measuring cups or electronic scales accurately. Assemble and combine ingredients for a purpose. They are beginning to follow a simple recipe with adult support.	Children can cut, peel or grate ingredients safely and hygienically, explaining why this is important (adult supervision is required). They can measure or weigh using a range of measuring scales. Assemble and combine ingredients for a purpose. They are beginning to follow a simple recipe with some adult support.	Food	• Prepare ingredients hygienically using appropriate utensils. • Measure ingredients to the nearest gram accurately. • Follow a recipe. • Assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking).	**With some support children can:** Children can cut, peel or grate ingredients safely, and hygienically. They can measure or weigh using a range of weighing scales accurately, to the nearest 10 grams Children can follow a simple recipe chronologically.	**With increasing independence children can:** Children can cut, peel or grate ingredients safely and hygienically. They can measure or weigh using a range of weighing scales accurately, often to the nearest gram. Children can follow a simple recipe chronologically. They understand how to turn on an oven, and can do so with adult supervision.	**Children can confidently:** Children can cut, peel or grate ingredients safely, efficiently and hygienically. They can measure or weigh using a range of weighing scales accurately, to the nearest gram. Children can follow a simple recipe chronologically. They understand how to turn on an oven, and can do so independently (although an adult will be supervising).

	Materials	• Cut materials accurately and safely by selecting appropriate tools. • Measure and mark out to the nearest millimetre. • Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs). • Select appropriate joining techniques.	Children can cut materials safely and with increasing accurately using appropriate tools. Measure and mark out to the nearest few centimetres accurately and for a purpose. Demonstrate a range of cutting and shaping techniques including tearing, cutting, folding and curling. Demonstrate a range of joining techniques including gluing, hinges or combining materials to strengthen a design.	Children can cut materials safely and with increasing accurately using self-selected tools. Measure and mark out to the nearest couple of centimetres accurately and for a purpose. Demonstrate a range of cutting and shaping techniques. Demonstrate a range of joining techniques including gluing, hinges or combining materials to strengthen a design.	Children can cut materials safely and accurately using appropriate tools which have been self-selected. They can use design rulers or tape measures to mark out lengths in cms with increased accuracy. They are beginning to measure shapes to a certain perimeter. They can name a simple join such as a block join, and can, with support, create a join.	Materials	• Cut materials accurately and safely by selecting appropriate tools. • Measure and mark out to the nearest millimetre. • Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs). • Select appropriate joining techniques.	**With some support children can:** Children can cut materials safely and accurately using appropriate tools which have often self-selected. They can use design rulers or tape measures to mark out lengths in cms with increased accuracy. They are beginning to measure shapes to a certain perimeter. They can also begin joining materials using a simple join such as a block joint.	**With increasing independence children can:** Children can cut materials safely and accurately using appropriate tools which have often been self-selected. They can use design rulers or tape measures to mark out lengths in mms or cms with increased accuracy. They are beginning to measure shapes to a certain perimeter.	**Children can confidently:** Children can cut materials safely and accurately using appropriate tools which have been self-selected. They can use design rulers or tape measures to mark out lengths in mms or cms with some precision. They can measure shapes to a certain perimeter. They are beginning to understand how to join materials, such as block joints or dovetail joints.
	Textiles	• Understand the need for a seam allowance. • Join textiles with appropriate stitching. • Select the most appropriate techniques to decorate textiles.	Children can shape textiles using templates, holding and transporting scissors safely. Join textiles using running stitch, threading the needle and tying a knot with limited support. Colour and decorate textiles using a number of techniques (such as dyeing, adding sequins or printing).	Children can shape textiles using templates, holding and transporting scissors safely. Join textiles using running stitch, threading the needle and tying a knot with increased accuracy. Colour and decorate textiles using a number of techniques (such as dyeing, adding sequins or printing).	Children can recognise and identify different stitches, such as running stitch and back stitch. They are beginning to tread a needle independently. They can select appropriate decoration to enhance a garment. Children can colour and decorate textiles using a number of techniques (such as dyeing, adding sequins or printing).	Textiles	• Understand the need for a seam allowance. • Join textiles with appropriate stitching. • Select the most appropriate techniques to decorate textiles.	**With some support children can:** Children can recognise and identify different stitches, such as running stitch and back stitch. They may need support sewing these precisely. They can identify the seam in garments. They can select appropriate decoration to enhance a garment.	**With increasing independence children can:** Children can recognise and identify different stitches, such as running stitch and back stitch. They may need support sewing these precisely. They can identify the seam in garments. They can select appropriate decoration to enhance a garment.	**Children can confidently:** Children can recognise and identify different stitches, such as running stitch, back stitch, blanket stitch and chain stitch. They may need support sewing these precisely. They can identify the seam in garments. They can select appropriate decoration and decotage to enhance a garment.
	Electricals and electronics	• Create series and parallel circuits	Children can insert batteries correctly, matching the + and – poles accurately. Diagnose faults in battery operated devices such as low battery, water damage or battery terminal damage by using electrical testing equipment where necessary.	Children are able to create a circuit board with a bulb and battery with guidance. They can hook up the wires, and are beginning to understand that a circuit always needs a power source, such as a **battery,** to power it.	Children are able to create a circuit board with a bulb and battery with some guidance. They can hook up the wires, and understand that a circuit needs a power source, such as a **battery,** to power it. They can also insert a bulb and are beginning to test a battery by using a working bulb.	Electricals and electronics	• Create series and parallel circuits	**With some support children can:** Children are able to create a circuit board with a bulb and battery. They can hook up the wires with some support. Children are beginning to understand that a circuit always needs a power source, such as a **battery**, with wires connected to both the **positive** (+) and **negative** (-) ends. They can replace the bulb with another	**With increasing independence children can:** Children are able to create a circuit board with increased accuracy, inserting a battery and bulb independently. They can hook up the wires with some support. Children are beginning to understand that a circuit always needs a power source, such as a **battery**, with wires connected to both the **positive** (+)	**Children can confidently:** Children are able to create a circuit board accurately, inserting a battery and bulb independently. They can hook up the wires with some support. Children are beginning to understand that a circuit always needs a power source, such as a **battery**, with wires connected to both the **positive** (+) and **negative** (-) ends. Children can explain

								electrical device, such as a buzzer.	and **negative** (-) ends.	why a circuit may not work, including diagnosing incomplete circuits.
	Computing	• Control and monitor models using software designed for this purpose.	Children can model designs using CAD (computer aided design) software. They should be able to log on independently, and select the correct dimensions/specifications to produce a model or design that is the correct scale.	Children can model designs using CAD (computer aided design) software. They are increasing in confidence using a range of software, and can produce a model or design that is to scale, sometimes adding their own personal design touches.	Children are beginning to create 3D models to using CAD (computer aided design) software, such as google sketch up. Children are becoming increasingly familiar with the software, producing a design that is to scale; they may begin to use simple coding.	Computing	• Control and monitor models using software designed for this purpose.	**With some support children can:** Children can model designs using CAD (computer aided design) software, such as google sketch up. This is beginning to include simple coding, imputing specifications and adapting them.	**With increasing independence children can:** Children can model designs using CAD (computer aided design) software, such as google sketch up. This may include simple coding, imputing specifications and adapting them.	**Children can confidently:** Children can model designs using CAD (computer aided design) software, such as google sketch up. This includes simple coding, imputing specifications and adapting them.
	Construction	• Choose suitable techniques to construct products or to repair items. • Strengthen materials using suitable techniques.	**With adult support:** Children can use drills, saws table clamps, and glue guns to practise drilling, screwing, gluing and nailing materials to make and strengthen products. These are used safely and accurately. Children are beginning to understand that a pyramid or cube model has structural integrity.	Children are able to name some of different types of joints, and are beginning to suggest suitable ones to join materials together. They can handle tools safely, with adult supervision. Children are beginning to understand that a pyramid or cube model has structural integrity.	Children are able to name some of the different types of joints, such as a dowel joint or block joint, and select a suitable one to construct a product. They can also beginning to strengthen a perpendicular joint by adding triangles. This will be supported by an adult.	Construction	• Choose suitable techniques to construct products or to repair items. • Strengthen materials using suitable techniques.	**With some support children can:** Use suitable techniques to construct or repair products, such as dowels, dovetails joints or glue guns. These are handled safely, with some adult supervision. They can also strengthen a joint by selecting the correct technique, such as adding card triangles to a joint.	**With increasing independence children can:** Use suitable techniques to construct or repair products, such as dowels, dovetails joints or glue guns. These are handled safely, with minimal adult supervision. They can also strengthen a joint by selecting the correct technique, such as adding card triangles to a joint.	**Children can confidently:** Use suitable techniques to construct or repair products, such as dowels, dovetails joints or glue guns. These are handled safely, with minimal adult supervision. They can also strengthen a joint by selecting the correct technique, such as adding card triangles to a joint.
	Mechanics	• Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys and gears).	Children can confidently explain a lever using technical language. They can name objects that use levers, and can confidently make their own lever for a purpose. Children can also produce a simple winding mechanisms, suggesting equipment and apparatus needed.	Children can confidently explain a type lever using technical language. They can name objects that use levers, and can confidently make their own simple lever for a purpose. Children can also produce a simple winding mechanisms independently.	Children can recognise and sometimes discuss the different types of mechanisms, such as levers, winding mechanisms, pulleys and gears. They are beginning to choose the most appropriate mechanism to fit a design brief, and explain why.	Mechanics	• Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys and gears).	**With increasing independence children can:** Children can recognise and discuss the different types of mechanisms, such as levers, winding mechanisms, pulleys and gears. They can choose the most appropriate mechanism to fit a design brief, and explain why, sometimes using technical language.	**With increasing independence children can:** Children can recognise and discuss the different types of mechanisms, such as levers, winding mechanisms, pulleys and gears. They can choose the most appropriate mechanism to fit a design brief, and explain why using technical language.	**Children can confidently:** Children can confidently recognise and discuss the different types of mechanisms, such as levers, winding mechanisms, pulleys and gears. They can choose the most appropriate mechanism to fit a design brief, and explain why using technical language.

To design, make, evaluate and improve	• Design with purpose by identifying opportunities to design.	Children can explain that DT produces items created for a specific purpose. They can think about the intended user, and carry out feasibility tests (still maybe supported) to discover the best material, e.g. which fabric is best for a shopping bag? Children are also beginning to list and incorporate the user's preferences into their designs.	Children can confidently explain that DT produces items created for a specific purpose. They can think about the intended user, and carry out feasibility tests to discover the best material, e.g. which fabric is best for a shopping bag? Children are also able to list and incorporate the user's preferences into their designs.	Children can confidently explain that DT produces items created for a specific purpose. They can think about the intended user, and carry out increasingly sophisticated feasibility tests to discover the best material, e.g. which fabric is best for a shopping bag? Children are also able to incorporate the user's preferences into their designs.	To design, make, evaluate and improve	• Design with purpose by identifying opportunities to design.	**With some support children can:** Explain what DT is, comparing it to Art and explaining that DT creates objects for a purpose and solutions to a problem. Children can identify problems from a range of images or objects; they can also beginning to identify ways in which they can improve an existing design.	**With increasing independence children can:** Explain what DT is, comparing it to Art and explaining that DT creates objects for a purpose and solutions to a problem. Children can identify problems or opportunities to adapt an existing design.	**Children can confidently:** Explain what DT is, comparing it to Art and explaining that DT creates objects for a purpose and solutions to a problem. Children can identify problems or opportunities to adapt an existing design.
	• Make products by working efficiently (such as by carefully selecting materials).	With adult support, children can select from a several objects, explaining which tool they have chosen for a specific purpose; they are also now able to complete an activity within a set time frame.	With support, children can select from a range of objects, explaining why it is the best tool for a specific purpose; they are also now able to complete an activity within a set time frame.	With limited support, children can self-select from a range of objects, explaining why it is the best tool for a specific purpose; they are also now able to complete an activity within a set time frame.		• Make products by working efficiently (such as by carefully selecting materials).	**With some support children can:** Children can confidently self-select from a range of objects, explaining why it is the best tool for a specific purpose, sometimes by comparing it to another piece of equipment.	**With increasing independence children can:** Children can confidently self-select from a range of objects, explaining why it is the best tool for a specific purpose, sometimes by comparing it to another piece of equipment.	**Children can confidently:** Children can confidently self-select from a range of objects, explaining why it is the best tool for a specific purpose, often by comparing it to another piece of equipment.
	• Refine work and techniques as work progresses, continually evaluating the product design.	**Children can confidently:** Adapt and change their design when creating it, explaining why they are doing it. They may refer back to their design and the brief, or talk about the users preferences.	Children can adapt and change their design when creating it, explaining why they are doing it. They refer back to their original design regularly, and sometimes taking into account the preferences of the intended user.	Children can adapt and change their design when creating it, explaining why they are doing it. They refer back to their original design regularly, and sometimes taking into account the preferences of the intended user.		• Refine work and techniques as work progresses, continually evaluating the product design.	**With some support children can:** Children can adapt and changing their design when constructing it, explaining why they are doing it. They can reference the original design and research stage to support their decisions and adaptations.	**With increasing independence children can:** Children can adapt and changing their design when constructing it, explaining why they are doing it. They can reference the original design and research stage to support their decisions and adaptations.	**Children can confidently:** Children are continually adapting and changing their design when constructing it, explaining why they are doing it. They can reference the original design and research stage to support their decisions and adaptations.
	• Use software to design and represent product designs.	**Children can:** Model designs using CAD (computer aided design) software. They should be able to log on independently, and select the correct dimensions/specifications to produce a model or design that is the correct scale, and is fit for purpose. Children may begin to alter and adapt deigns for fit the brief.	Model designs using CAD (computer aided design) software. They should be able to log on independently, and select the correct dimensions/specifications to produce a model or design that is the correct scale, and is fit for purpose. Children can alter and adapt deigns for fit the brief with some independence.	Model designs using CAD (computer aided design) software. They should be able to log on independently, and select the correct dimensions/specifications to produce a model or design that is the correct scale, and is fit for purpose. Children can alter and adapt deigns for fit the brief with independently.		• Use software to design and represent product designs.	**With some support children can:** Model designs using CAD (computer aided design) software. They are becoming more confident at navigating through the all the tools and formatting options with reference to the original design and specifications.	**With increasing independence children can:** Model designs using CAD (computer aided design) software. They are becoming increasingly confident at navigating through the all the tools and formatting options with reference to the original design and specifications.	**Children can confidently:** Model designs using CAD (computer aided design) software. They are becoming increasingly confident at navigating through the all the tools and formatting options with reference to the original design and specifications.

To take inspiration from design throughout history	• Identify some of the great designers in all of the areas of study (including pioneers in horticultural techniques) to generate ideas for designs.	Children research and discuss a designer, (linking it to current project). Children begin to discuss the designer's aesthetic and influence, incorporating some of their ideas into a design.	Children research and discuss a designer, (linking it to current project). Children can to discuss the designer's aesthetic and influence, incorporating some of their ideas into a design.	Children research and discuss a designer, (linking it to current project). Children can to discuss the designer's aesthetic and influence, incorporating some of their ideas into a design. Children are able to discuss what elements have influenced them.	To take inspiration from design throughout history	• Identify some of the great designers in all of the areas of study (including pioneers in horticultural techniques) to generate ideas for designs.	**With some support children can:** Research and discuss a range of great designers, including Joseph Paxton (local)) and Lancelot Capability-Brown, identifying themes and patterns through history that link designers.	**With increasing independence children can:** Research and discuss a range of great designers, including Joseph Paxton (local) and Lancelot Capability-Brown, identifying themes and patterns through history that link designers and herald new design eras.	**Children can confidently:** Research and discuss a range of great designers, including Joseph Paxton and Lancelot Capability-Brown, identifying themes and patterns through history that link designers and herald new design eras.
	• Improve upon existing designs, giving reasons for choices.	**Children can:** Suggest ways a design could be improved, e.g. changing it to a waterproof material or changing the size. They should be beginning to refer to the design specifications and purpose.	**Children can:** Suggest ways a design could be improved, e.g. changing it to a waterproof material or changing the size. Children are increasingly able to refer to the design specifications when adapting.	**Children can:** Suggest ways a design could be improved, e.g. changing it to a waterproof material or changing the size. Children are consistently able to refer to the design specifications when adapting.		• Improve upon existing designs, giving reasons for choices.	**With some support children can:** Children begin to generate ideas to improve on existing designs. They can draw upon and reference other designs or designers for inspiration.	**With increasing independence children can:** Children will independently begin to generate ideas to improve on existing designs, some of which are viable. They can draw upon and reference other designs or designers for inspiration.	**Children can confidently:** Children will independently begin to generate ideas to improve on existing designs, some of which are viable. They can draw upon and reference other designs or designers for inspiration.
	• Disassemble products to understand how they work.	**Children can:** Examine objects and designs, e.g. a bag, and dissemble it, observing how it is made including the joints/stitches/joints etc.	**Children can:** Examine a range objects and designs, e.g. a bag, and dissemble it, observing how it is made including some of the vocabulary they have learnt. They may link it to other objects, with support.	**Children can:** Examine objects and designs, e.g. a bag, and dissembling it independently, observing how it is made including some of the vocabulary they have learnt, sometimes comparing and contrasting it to different objects.		• Disassemble products to understand how they work.	**With some support children can:** Examine objects and designs, e.g. a bag, and dissemble it (if appropriate), commenting on how it is made, using some design vocabulary.	**With increasing independence children can:** Examine objects and designs, e.g. a bag, and dissemble it (if appropriate), commenting on how it is made, using increasingly sophisticated design vocabulary, making connections to other designs.	**Children can confidently:** Examine objects and designs, e.g. a bag, and dissemble it (if appropriate), commenting on how it is made, using design and technical vocabulary, making connections to other designs.

Milestones

	YEAR 5					YEAR 6				
Objectives	**Overview of Essential Knowledge and Skills**		**Emerging**	**Developing**	**Secure**	**Overview of Essential Knowledge and Skills**		**Emerging**	**Developing**	**Secure**
To master practical skills	Food	• Prepare ingredients hygienically using appropriate utensils. • Measure ingredients to the nearest gram accurately. • Follow a recipe. • Assemble or cook ingredients (controlling the temperature of the	**Children can:** Children can cut, peel or grate ingredients safely, efficiently and hygienically. They can measure or weigh using a range of weighing scales accurately, to the nearest gram. Children can follow a simple recipe chronologically.	**Children can:** Children can cut, peel or grate ingredients safely, efficiently and hygienically. They can measure or weigh using a range of weighing scales accurately and to the nearest gram. Children can follow a recipe chronologically.	**Children can:** Children can cut, peel or grate ingredients safely, efficiently and hygienically. They can measure or weigh using a range of weighing scales accurately and to the nearest gram. Children can follow a recipe chronologically.	Food	• Prepare ingredients hygienically using appropriate utensils. • Measure ingredients to the nearest gram accurately. • Follow a recipe. • Assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking).	**With some support children can:** Children can cut, peel or grate ingredients safely, efficiently and hygienically. They can measure or weigh using a range of weighing	**With increasing independence children can:** Children can cut, peel or grate ingredients safely, efficiently and hygienically. They can measure or weigh using a range of weighing	**Children can confidently:** Children can cut, peel or grate ingredients safely, efficiently and hygienically. They can measure or weigh using a range of weighing scales accurately, to the nearest gram. Follow a complex set of instructions. They can also recall several simple recipes from

		oven or hob, if cooking).	They understand how to turn on an oven, and can do so independently (although an adult will be supervising).	They understand how to turn on a cooking appliance (with adult supervision).	They understand how to turn on and off cooking appliances (with adult supervision). They may be able to recall most of the ingredients of a basic recipe, such a sponge, but no know the quantities and ratios.			scales accurately, to the nearest gram. Follow a set of instructions. They may also recall a simple recipes from memory, such as a pancake recipe. They also know that it is possible to rectify some cooking errors by adding more of an ingredient.	scales accurately, to the nearest gram. Follow a set of instructions. They may also recall a simple recipes from memory, such as a pancake recipe. They may also be able to rectify any mistakes (e.g. a wet batter may require a little more flour).	memory, such as a pancake recipe or a Victoria sponge. They may also be able to rectify any mistakes (e.g. a wet batter may require a little more flour).
	Materials	• Cut materials accurately and safely by selecting appropriate tools. • Measure and mark out to the nearest millimetre. • Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs). • Select appropriate joining techniques.	**Children can:** Children can cut materials safely and accurately using appropriate tools which have been self-selected. They can use design rulers or tape measures to mark out lengths in mms or cms with some precision. They can measure shapes to a certain perimeter. They are beginning to understand how to join materials, such as block joints or dovetail joints.	**Children can:** Children can cut materials safely and accurately using appropriate tools which have been self-selected. They can use design rulers or tape measures to mark out lengths in mms or cms with increasing precision. They can measure shapes to a certain perimeter. They are beginning to understand how to join materials, such as block joints.	**Children can:** Children can cut materials safely and accurately using appropriate tools which have been self-selected. They can use design rulers or tape measures to mark out lengths in mms or cms with some precision. They can measure shapes to a certain perimeter. They are beginning to understand how to join materials with some precision, such as block joints or dovetail joints.	Materials	• Cut materials accurately and safely by selecting appropriate tools. • Measure and mark out to the nearest millimetre. • Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs). • Select appropriate joining techniques.	**With some support children can:** Children can cut materials safely and accurately using appropriate tools which have been self-selected. They can use design rulers or tape measures to mark out lengths in mms or cms with precision. They can measure shapes to a set perimeter. They can understand how to join materials, using more than one join, such as mitre or dovetail, carefully inserting slots when necessary.	**With increasing independence children can:** Children can cut materials safely and accurately using appropriate tools which have been self-selected. They can use design rulers or tape measures to mark out lengths in mms or cms with precision. They can measure shapes to a set perimeter. They can understand how to join materials, using a range of different joins such as mitre or dovetail, carefully inserting slots when necessary.	**Children can confidently:** Children can cut materials safely and accurately using appropriate tools which have been self-selected. They can use design rulers or tape measures to mark out lengths in mms or cms with precision. They can measure shapes to a set perimeter. They can understand how to join materials, using a range of different joins such as mitre or dovetail, carefully inserting slots when necessary.
	Textiles	• Understand the need for a seam allowance. • Join textiles with appropriate stitching. • Select the most appropriate techniques to decorate textiles.	**Children can:** Children can recognise and identify different stitches, such as running stitch, back stitch, blanket stitch and chain stitch. They may need support sewing these precisely. They can identify the seam in garments. They can select appropriate decoration and decotage to enhance a garment.	Children can recognise and identify different stitches, such as running stitch, back stitch, blanket stitch and chain stitch. They may need support sewing these neatly and uniformly. They can identify the seam in garments. They can select appropriate decoration and decotage to enhance a garment.	Children can recognise and identify different stitches, such as running stitch, back stitch, blanket stitch and chain stitch. They can stitch these with minimum support with increasing accuracy. They can identify the seam in different types of garments. They can select appropriate and appealing decoration to enhance a garment.	Textiles	• Understand the need for a seam allowance. • Join textiles with appropriate stitching. • Select the most appropriate techniques to decorate textiles.	**With some support children can:** Children can recognise and identify different stitches, such as running stitch, back stitch, blanket stitch and chain stitch. They can stitch these with increasing accuracy and precision. They can identify the seam in different types of garments, and can	**With increasing independence children can:** Children can recognise and identify different stitches, such as running stitch, back stitch, blanket stitch and chain stitch and tacking stitch. They can stitch these with increasing accuracy and precision. They can identify the seam in different types of	**Children can confidently:** Children can recognise and identify different stitches, such as running stitch, back stitch, blanket stitch and chain stitch and tacking stitch. They can stitch these with increasing accuracy and precision. They can identify the seam in different types of garments, and can explain that they join two or more layers of fabric together. They can select appropriate and appealing decoration to enhance a garment,

								explain that they join two or more layers of fabric together. They can select appropriate and appealing decoration to enhance a garment.	garments, and can explain that they join two or more layers of fabric together. They can select appropriate and appealing decoration to enhance a garment, often thinking about colour and texture combinations.	often thinking about colour and texture combinations.
	Electricals and electronics	• Create series and parallel circuits	**Children can:** Children are able to create a circuit board accurately, inserting a battery and bulb independently. They can hook up the wires with some support. Children are beginning to understand that a circuit always needs a power source, such as a **battery**, with wires connected to both the **positive** (+) and **negative** (-) ends. Children can explain why a circuit may not work, including diagnosing incomplete circuits.	**Children can:** Children are able to create a circuit board accurately, inserting a battery and bulb independently. They can hook up the wires independently. Children can explain that a circuit always needs a power source, such as a **battery**, with wires connected to both the **positive** (+) and **negative** (-) ends. Children can explain why a circuit may not work, including diagnosing incomplete circuits and testing them with the aid of a working bulb or component.	**Children can:** Children are able to create a circuit board accurately, inserting a battery and bulb independently. They can hook up the wires independently. Children can explain that a circuit always needs a power source, such as a **battery**, with wires connected to both the **positive** (+) and **negative** (-) ends. Children can explain why a circuit may not work, including diagnosing incomplete circuits and testing them with the aid of a working bulb or component.	Electricals and electronics	• Create series and parallel circuits	**With some support children can:** Children are able to create a circuit board accurately, connecting the wires independently. Children can explain that a circuit always needs a power source, such as a **battery**, with wires connected to both the **positive** (+) and **negative** (-) ends. Children can carry out simple diagnostic testing of incomplete circuits with the aid of a working bulb or component. They can successfully connect a motor, switch and buzzer in a circuit.	**With increasing independence children can:** Children are able to create a circuit board accurately, connecting the wires independently to power a motor, switch and buzzer and bulb. Children can explain that a circuit always needs a power source, such as a **battery**, with wires connected to both the **positive** (+) and **negative** (-) ends. Children can carry out simple diagnostic testing of incomplete circuits with the aid of a working bulb or component. They can create one or more parallel circuits accurately.	**Children can confidently:** Children are able to create a circuit board accurately, connecting the wires independently to power a motor, switch and buzzer and bulb. Children can carry out simple diagnostic testing of incomplete circuits with the aid of a working bulb or component. They can create one or more parallel circuits accurately. Children can rearrange a circuit to make the most efficient use of energy, and can explain why a series of bulbs get progressively dimmer as they more around the board.
	Computing	• Use computer software to design	**Children can:** Children can model designs using CAD (computer aided design) software, such as google sketch up. This includes simple coding, imputing specifications and adapting them.	Children can model designs using CAD (computer aided design) software, such as google sketch up. This includes simple coding, imputing specifications and adapting them. Children are beginning to experiment, and through trial and error, produce the most accurate 3D model.	Children can model designs using CAD (computer aided design) software, such as google sketch up. This includes more complex simple coding, imputing specifications and often adapting them. Children are beginning to experiment, and through trial and error,	Computing	• Use computer software to design	**With some support children can:** Understand the importance and increasing benefits of CAD to generate a model without physically making one. They can input and alter different specifications on a	**With increasing independence children can:** Understand the importance and increasing benefits of CAD to generate a model without physically making one. They can input and alter different specifications on a	**Children can confidently:** Understand the importance and increasing benefits of CAD to generate a model without physically making one. They can input and alter different specifications on a piece of CAD software, understanding the importance of modifications in DT.

					produce the most accurate 3D model.			piece of CAD software, understanding the importance of modifications in DT.	piece of CAD software, understanding the importance of modifications in DT.	
	Construction	• Choose suitable techniques to construct products or to repair items. • Strengthen materials using suitable techniques.	**Children can:** Use suitable techniques to construct or repair products, such as dowels, dovetails joints or glue guns. These are handled safely, with minimal adult supervision. They can also strengthen a joint by selecting the correct technique, such as adding card triangles to a joint.	**Children can:** Use suitable techniques to construct or repair products, such as dowels, dovetails joints or glue guns. These are handled safely, with minimal adult supervision. They can also strengthen a joint by selecting the correct technique, such as adding card triangles to a joint. They are beginning to select the most efficient and effective techniques for attaching each component.	**Children can:** Use suitable techniques to construct or repair products, such as dowels, dovetails joints or glue guns. These are handled safely, with minimal adult supervision. They can also strengthen a joint by selecting the correct technique, such as adding card triangles to a joint. They can select the most efficient and effective techniques for attaching each component.	Construction	• Choose suitable techniques to construct products or to repair items. • Strengthen materials using suitable techniques.	**With some support children can:** Can use a range of suitable skills and techniques to begin to demonstrate an emerging talent in construction. Children can demonstrate knowledge of attaching two pieces of material together in a number of ways. They can handle all equipment respectfully and safely, wearing protective gear if necessary.	**With increasing independence children can:** Can use a range of suitable skills and techniques to begin to demonstrate an emerging talent in construction. Children can demonstrate knowledge of attaching two pieces of material together in a number of ways. They can handle all equipment respectfully and safely, wearing protective gear if necessary.	**Children can confidently:** Can use a range of suitable skills and techniques to begin to demonstrate an emerging talent in construction. Children can demonstrate knowledge of attaching two pieces of material together in a number of ways, describing the benefits and disadvantages of each. Children can handle equipment respectfully and safely, wearing protective gear if necessary.
	Mechanics	• Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys and gears).	**Children can:** Children can confidently recognise and discuss the different types of mechanisms, such as levers, winding mechanisms, pulleys and gears. They can choose the most appropriate mechanism to fit a design brief, and explain why using technical language.	**Children can:** Children can confidently recognise and discuss the different types of mechanisms, such as levers, winding mechanisms, pulleys and gears. They can choose the most appropriate mechanism to fit a design brief, and explain why using technical language. They are beginning to compare products with the same or different mechanisms to inform them.	**Children can:** Children can confidently recognise and discuss the different types of mechanisms, such as levers, winding mechanisms, pulleys and gears. They can choose the most appropriate mechanism to fit a design brief, and explain why using technical language. They can compare products with the same or different mechanisms to inform them.	Mechanics	• Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys and gears).	**With increasing independence children can:** Discuss pieces of machinery and structures in terms of the mechanisms they use, such as pneumatics in brakes and winding mechanisms to lift draw bridges. Children begin to show an interest in how things work, and can select the most effective mechanism for a specific purpose.	**With increasing independence children can:** Discuss pieces of machinery and structures in terms of the mechanisms they use, such as pneumatics in brakes and winding mechanisms to lift draw bridges. Children show an interest in how things work, and can select the most effective mechanism for a specific purpose, beginning to use technical language.	**Children can confidently:** Discuss pieces of machinery and structures in terms of the mechanisms they use, such as pneumatics in brakes and winding mechanisms to lift draw bridges. Children show an interest in how things work, and can select the most effective mechanism for a specific purpose, confidently using increasingly technical language.
To design, make, evaluate and improve	• Design with purpose by identifying opportunities to design.		**Children can:** Explain what DT is, comparing it to Art and explaining that DT creates objects for a purpose and solutions to a problem. Children can identify problems or	**Children can:** Explain what DT is, explaining that it is purposeful, and offers a solution to a problem. Children can identify problem in everyday life (this may be supported) and	**Children can:** Explain what DT is, explaining that it is purposeful, and offers a solution to a problem. Children can identify problem in everyday life (this may be supported) and	To design, make, evaluate and improve	• Design with purpose by identifying opportunities to design.	**With some support children can:** Display an interest in design and an imagination to create a design solution to a known or unknown	**With increasing independence children can:** Display an interest in design and an imagination to create a design solution to a known or unknown	**Children can confidently:** Display an interest in design and an imagination to create a design solution to a known or unknown problem. Communicate ideas and designs skilfully and accurately in 2D and 3D, using a variety of

		opportunities to adapt an existing design.	create a design solution for it. This may not be feasible to create.	create a design solution for it. Children begin to think about the feasibility of producing it.			problem. Communicate ideas and designs skilfully and accurately in 2D and 3D, using a variety of techniques, including computing.	problem. Communicate ideas and designs skilfully and accurately in 2D and 3D, using a variety of techniques, including computing.	techniques, including computing
	• Make products by working efficiently (such as by carefully selecting materials).	**Children can:** Children can confidently self-select from a range of objects, explaining why it is the best tool for a specific purpose, often by comparing it to another piece of equipment. They can plan purposefully, organising their time to make best use of it.	**Children can:** Children can confidently self-select from a range of objects, explaining why it is the best tool for a specific purpose, comparing it to another piece of equipment. They can plan purposefully, organising their time to make best use of it. They are beginning to think of ways to use materials with the least possible waste, including cutting sections from the edges rather than the middle.	**Children can:** Children can confidently self-select from a range of objects, explaining why it is the best tool for a specific purpose, comparing it to another piece of equipment. They can plan purposefully, organising their time to make best use of it. They can also think of ways to use materials with the least possible waste, including cutting sections from the edges rather than the middle.		• Make products by working efficiently (such as by carefully selecting materials).	**With some support children can:** Select the most effective pieces of equipment and materials consistently, beginning to compare the benefits and shortcomings of other tools, including cost and availability. They will be aware of the environmental impact of waste, and understand the need to reduce it.	**With increasing independence children can:** Select the most effective pieces of equipment and materials consistently, beginning to compare the benefits and shortcomings of other tools, including cost and availability. They will be aware of the environmental impact of waste, and understand the need to reduce it.	**Children can confidently:** They can select the most effective pieces of equipment and materials consistently, comparing the benefits and shortcomings of other tools, including cost and availability. They will be aware of the environmental impact of waste, demonstrating a responsibility towards reducing it.
	• Refine work and techniques as work progresses, continually evaluating the product design.	**Children can:** Children are continually adapting and changing their design when constructing it, (they may need prompting to do this) explaining why they are doing it. With help they can reference the original design and research stage to support their decisions and adaptations.	**Children can:** Children are continually adapting and changing their design when constructing it, explaining why they are doing it. With help they can reference the original design and research stage to support their decisions and adaptations.	**Children can:** Children are continually adapting and changing their design when constructing it, explaining why they are doing it. They can reference the original design and research stage to support their decisions and adaptations.		• Refine work and techniques as work progresses, continually evaluating the product design.	**With some support children can:** Children are beginning to produce well-conceived practical solutions to problems. They can complete common practical, diagnostic, repair and maintenance tasks and multi-stage processes. They evaluate and, if necessary, adapt the design at regular intervals.	**With increasing independence children can:** Children are beginning to produce well-conceived practical solutions to problems. They can complete common practical, diagnostic, repair and maintenance tasks and multi-stage processes. They evaluate and, if necessary, adapt the design continually.	**Children can confidently:** Children are beginning to produce well-conceived practical solutions to problems. They can complete common practical, diagnostic, repair and maintenance tasks and multi-stage processes. They evaluate and, if necessary, adapt the design continually, understanding the importance of this.
	• Use software to design and represent product designs.	**Children can:** Children can model designs using CAD (computer aided design) software, such as google sketch up. This includes simple coding, imputing	Children can model designs using CAD (computer aided design) software, such as google sketch up. This includes simple coding, imputing specifications and adapting them. Children	Children can model designs using CAD (computer aided design) software, such as google sketch up. This includes more complex simple coding, imputing specifications and often		• Use software to design and represent product designs.	**With some support children can:** Understand the importance and increasing benefits of CAD to generate a model without	**With increasing independence children can:** Understand the importance and increasing benefits of CAD to generate a model without	**Children can confidently:** Understand the importance and increasing benefits of CAD to generate a model without physically making one. They can input and alter different specifications on a piece of

		specifications and adapting them.	are beginning to experiment, and through trial and error, produce the most accurate 3D model.	adapting them. Children are beginning to experiment, and through trial and error, produce the most accurate 3D model.			physically making one. They can input and alter different specifications on a piece of CAD software, understanding the importance of modifications in DT.	physically making one. They can input and alter different specifications on a piece of CAD software, understanding the importance of modifications in DT.	CAD software, understanding the importance of modifications in DT.
To take inspiration from design throughout history	• Identify some of the great designers in all of the areas of study (including pioneers in horticultural techniques) to generate ideas for designs.	**Children can:** Research and discuss a great designer, such as Joseph Paxton and Lancelot Capability-Brown, identifying themes and patterns through history that link designers and herald new design eras.	**Children can:** Research and discuss a great designer, such as Joseph Paxton and Lancelot Capability-Brown, identifying themes and patterns through history that link designers and herald new design eras. Children will begin thinking about the legacy they have left.	**Children can:** Research and discuss a great designer, such as Joseph Paxton and Lancelot Capability-Brown, identifying themes and patterns through history that link designers and herald new design eras. Children will begin thinking about the legacy they have left and the influence that is still evident today.	To take inspiration from design throughout history	• Identify some of the great designers in all of the areas of study (including pioneers in horticultural techniques) to generate ideas for designs.	**With some support children can:** Carry out a research project of a designer of their choice, such as Isambard Kingdom Brunel or George Stephenson. They will be able to comment on the effect there design had on the world, and give examples of ways in which their legacy is still evident today.	**With increasing independence children can:** Carry out a research project of a designer of their choice, such as Isambard Kingdom Brunel or George Stephenson. They will be able to comment on the effect there design had on the world, and give examples of ways in which their legacy is still evident today.	**Children can confidently:** Carry out a research project of a designer of their choice, such as Isambard Kingdom Brunel or George Stephenson. They will be able to comment on the effect there design had on the world, and give examples of ways in which their legacy is still evident today.
	• Improve upon existing designs, giving reasons for choices.	**Children can:** Children will independently begin to generate ideas to improve on existing designs, some of which are viable. They can draw upon and reference other designs or designers for inspiration.	**Children can:** Children will independently begin to generate ideas to improve on existing designs, most of which are viable. They will increasingly draw upon and reference other designs or designers for inspiration.	**Children can:** Children will independently begin to generate ideas to improve on existing designs, most of which are viable. They will draw upon and reference other designs or designers for inspiration.		• Improve upon existing designs, giving reasons for choices.	**With some support children can:** Children will generate ideas to improve on existing designs, weighing up factors such as affordability and feasibility. They will draw upon and reference other designs or designers for inspiration, and use historical and contextual references to influence and improve work.	**With increasing independence children can:** Children will generate ideas to improve on existing designs, weighing up factors such as affordability and feasibility. They will draw upon and reference other designs or designers for inspiration, and use historical and contextual references to influence and improve work.	**Children can confidently:** Children will generate ideas to improve on existing designs, weighing up factors such as affordability and feasibility. They will draw upon and reference other designs or designers for inspiration, and use historical and contextual references to influence and improve work.
	• Disassemble products to understand how they work.	**Children can:** Examine objects and designs, e.g. a bag, and dissemble it (if appropriate), commenting on how it is made, using increasingly	**Children can:** Examine objects and designs, e.g. a bag, and dissemble it (if appropriate), commenting on how it is made, using increasingly sophisticated design vocabulary. When it is	**Children can:** Examine objects and designs, e.g. a bag, and dissemble it (if appropriate), commenting on how it is made, using increasingly sophisticated design vocabulary. When it is		• Disassemble products to understand how they work.	**With some support children can:** Disassemble objects to understand how they work. They will make links to similar products,	**With increasing independence children can:** Disassemble objects to understand how they work. They will make links to similar products,	**Children can confidently:** Disassemble objects to understand how they work. They will make links to similar products, making a side by side comparison. Explore materials and show an interest in knowing technological

		sophisticated design vocabulary.	not possible to take apart a design, children are beginning to suggest other ways to understand how something works, including using technology.	not possible to take apart a design, children can suggest other ways to understand how something works, such as analysing a similar mechanism.			making a side by side comparison. Explore materials and show an increasing interest in keeping up to date with technological developments.	making a side by side comparison. Explore materials and show an increasing interest in keeping up to date with technological developments.	developments. Children will begin to analyse the work of others notable in the field to inform work.