

Design & Technology Progression – Based on the D&T Association Progression Framework

	Designing	Making	Evaluating
Y7	<p><u>Understanding contexts, users and purposes</u></p> <ul style="list-style-type: none"> • Work confidently within a range of relevant domestic, local and industrial contexts • Consider the influence of a range of lifestyle factors and consumer choices when designing products • Consider additional factors such as ergonomics, anthropometrics or dietary needs • Analyse where human values may conflict, and compromise has to be achieved • Develop detailed design specifications to guide their thinking • Identify and solve their own design problems <p><u>Generating, developing, modelling and communicating ideas</u></p> <ul style="list-style-type: none"> • Use specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations • Decide which design criteria clash and determine which should take priority • Develop and communicate design ideas using annotated sketches • Produce 3D models to develop and communicate ideas • Use mathematical modelling to indicate likely performance before using physical materials and components. • Give oral and digital presentations and use computer-based tools. • Use 2D and begin to use 3D CAD packages to model their ideas 	<p><u>Planning</u></p> <ul style="list-style-type: none"> • Select appropriately from specialist tools, techniques, processes, equipment and machinery, including computer-aided manufacture • Select appropriately from a wider, more complex range of materials, components and ingredients, taking into account their properties such as water resistance and stiffness • Produce ordered sequences and schedules for manufacturing products they design, detailing resources required • Produce costings using spreadsheets for products they design and make <p><u>Practical skills and techniques</u></p> <ul style="list-style-type: none"> • Follow procedures for safety and hygiene and understand the process of risk assessment • Use a wider, more complex range of materials, components and ingredients, taking into account their properties • Use a broad range of manufacturing techniques including handcraft skills and machinery to manufacture products precisely • Exploit the use of CAD/CAM equipment to manufacture products, increasing standards of quality, scale of production and precision • Apply a range of finishing techniques, including those from art and design, to a broad range of materials • Make use of specialist equipment to mark out materials • Use a broad range of material joining techniques including stitching, mechanical fastenings, heat processes and adhesives • Use CAD/CAM to produce and apply surface finishing techniques • Investigate and develop skills in modifying the appearance of materials including textiles and other manufactured materials e.g.dyeing and applique 	<p><u>Own ideas and products</u></p> <ul style="list-style-type: none"> • Test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups • Evaluate their products against their original specification and identify ways of improving them • Actively involve others in the testing of their products <p><u>Existing products</u></p> <ul style="list-style-type: none"> • Investigate and analyse new and emerging technologies • Investigate and analyse products through disassembly to determine how they are constructed and function • Investigate and analyse the positive and negative impact that products can have in the wider world <p><u>Key events and individuals</u></p> <ul style="list-style-type: none"> • Know about an increasing range of designers, engineers, chefs, technologists and manufacturers and be able to relate their products to their own designing and making
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Y6	<p><u>Understanding contexts, users and purposes</u></p> <ul style="list-style-type: none"> • Work confidently within a range of contexts (see Y5 list) • Describe the purpose of their products. • Indicate the design features of their products that will appeal to intended users. • Explain how particular parts of their products work. • Carry out research, using surveys, interviews, questionnaires or web-based resources. • Identify the preferences and values of particular individuals and groups. • Develop a simple design specification to guide their thinking. • Share and clarify ideas through discussion. <p><u>Generating, developing, modelling and communicating ideas</u></p> <ul style="list-style-type: none"> • Model their ideas using prototypes and pattern pieces. • Use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas. • Use computer-aided design to develop and communicate their ideas. • Generate realistic ideas, focusing on the needs of the user. • As an individual and group, make design decisions that take account of the availability of resources. 	<p><u>Planning</u></p> <ul style="list-style-type: none"> • Select tools and equipment suitable for the task and explain their choice of tools and equipment in relation to the skills and techniques they will be using. • Select materials and components suitable for the task and explain their choice of materials and components according to functional properties and aesthetic qualities. • Produce appropriate lists of tools, equipment and materials that they need. • Formulate step-by-step plans as a guide to making. <p><u>Practical skills and techniques</u></p> <ul style="list-style-type: none"> • Follow procedures for safety and hygiene. • Use a wide range of materials and components, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components. • Accurately measure, mark out, cut and shape materials and components. • Accurately assemble, join and combine materials and components. • Accurately apply a range of finishing techniques, including those from art and design. • Use techniques that involve a number of steps. • Demonstrate resourcefulness when tackling practical problems. 	<p><u>Own ideas and products</u></p> <ul style="list-style-type: none"> • Identify the strengths and areas for development in theirs, and others', ideas and products. • Consider the views of others, including intended users, to improve their work. • Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make. • Evaluate their ideas and products against their original design specification. • Investigate & analyse a range of existing products against their own design criteria & consider the views of others to improve their work. <p><u>Existing products</u></p> <p>Pupils investigate and analyse:</p> <ul style="list-style-type: none"> - how well products have been designed and made. - why materials have been chosen. - what methods of construction have been used. - how well products work to achieve their purposes. - how well products meet user needs and wants. - how much products cost to make. - how innovative products are. - how sustainable the materials in products are. - what impact products have beyond their intended purpose. <p><u>Key events and individuals</u></p> <p>Have a knowledge about and be able to discuss inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products</p>

Y5

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Understanding contexts, users and purposes

- Work within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment.
- Describe the purpose of their products.
- Explain how particular parts of their products work.
- Carry out research, using surveys, questionnaires and web-based resources.
- Identify the needs of particular individuals.
- Develop a simple plan to guide thinking.
- Share ideas through discussion.

Generating, developing, modelling and communicating ideas

- Model their ideas using prototypes/small models.
- Use annotated sketches and exploded diagrams to develop and show their ideas.
- Generate realistic ideas.
- As a group, make design decisions that take account of the availability of resources.

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Planning

- Select tools and equipment suitable for the task.
- Explain their choice of tools and equipment.
- Select materials suitable for the task.
- Explain their choice of materials according to aesthetic qualities.
- Produce appropriate lists of tools, equipment and materials that they need.

Practical skills and techniques

- Follow procedures for safety and hygiene.
- Use an increasingly wider range of materials and components, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components.
- Measure, mark out, cut and shape materials and components.
- Assemble, join and combine materials and components.
- Apply a range of finishing techniques, including those from art and design.
- Demonstrate resourcefulness when tackling practical problems.

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Own ideas and products

- Identify some of the strengths and areas for development in their ideas and products.
- Consider the views of others, including intended users, to improve their work.
- Critically evaluate the quality of the design, manufacture and fitness for purpose of their products.
- Evaluate their ideas and products against their original design specification.

Existing products

Pupils investigate and analyse:

- how well products have been designed and made.
- why some materials have been chosen
- some basic methods of construction that have been used.
- how well products work to achieve their purposes
- how much products cost to make
- how sustainable materials in products are

Key events and individuals

Discuss inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products

Y4

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Understanding Contexts, users and purpose

- Continue to work within a range of contexts.
- Describe the purpose of their products.
- Explain some design features of their products that will appeal to intended users.
- Explain how particular parts of their products work.
- Gather information about needs and wants of particular individuals and groups.
- Within groups, develop their own design criteria and use these to inform their ideas.

Generating, developing, modelling & communicating ideas

- Share and clarify ideas through discussion.
- Model their ideas using prototypes and pattern pieces.
- Use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas.
- Use computer-aided design to develop and communicate their ideas.
- Generate realistic ideas, focusing on the needs of the user.
- Make design decisions that take account of the availability of resources.

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Planning

- Select tools and equipment suitable for the task.
- Explain their choice of tools and equipment in relation to the skills and techniques they will be using.
- Select materials and components suitable for the task.
- Explain their choice of materials and components according to functional properties and aesthetic qualities.
- Order the main stages of making.

Practical skills and techniques

- Follow procedures for safety and hygiene.
- Use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components.
- Measure, mark out, cut and shape materials and components with some accuracy.
- Assemble, join and combine materials and components with some accuracy.
- Apply a range of finishing techniques, including those from art and design, with some accuracy.

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Own ideas and products

Identify the strengths and areas for development in their ideas and products.

Consider the views of others, including intended users, to improve their work.

Refer to their design criteria as they design and make.

Use their design criteria to evaluate their completed products.

Existing products

Pupils investigate and analyse:

- how well products have been designed and made
- why materials have been chosen
- what methods of construction have been used developed ground-breaking products
- how well products work to achieve their purposes
- how well products meet user needs and wants
- who designed and made the products
- where and when products were designed and made
- whether products can be recycled or reused .

Key events and individuals

Have a knowledge about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products

Y3

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Understanding Contexts, users and purpose

- Continue to work within a range of contexts.
- Describe the purpose of their products.
- Explain some design features of their products that will appeal to intended users.
- Explain how particular parts of their products work.
- Gather information about needs and wants of particular individuals and groups.
- Within groups, develop their own design criteria and use these to inform their ideas.

Generating, developing, modelling & communicating ideas

- Share and discuss ideas.
- Create prototypes and pattern pieces.
- Use annotated sketches, cross-sectional drawings and exploded diagrams to communicate their ideas.
- Think of ideas based on needs of user.
- Make choices about which resources to use.

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Planning

- Select tools and equipment suitable for the task.
- Select materials and components suitable for the task.
- Order the main stages of making.
- Follow procedures for safety and hygiene.
- Use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components.

Practical skills & techniques

- With support, measure, mark out, cut and shape materials and components with some accuracy.
- Assemble, join and combine materials and components with some accuracy.
- Apply a range of finishing techniques, including those from art and design, with some accuracy.

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Own ideas and products

Identify the strengths and areas for development in their ideas and products.

Refer to their design criteria as they design and make.

Use their design criteria to evaluate their completed products.

How well products have been designed and made.

Existing products

Pupils investigate and analyse:

- why materials have been chosen.
- what methods of construction have been used.
- how well products work
- how well products achieve their purposes
- how well products meet user needs and wants.
- whether products can be recycled or reused.

Key events and individuals

Beginning to have an awareness about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products.

Y2

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Understanding Contexts, users and purpose

- Work confidently within a range of contexts, such as imaginary, story-based, home, school, gardens, playgrounds, local community, industry & the wider environment.
- Use pictures and words to explain what they are designing & making.
- Say whether their products are for themselves or other users.
- Describe what their products are for.
- Use simple design criteria to help develop their ideas.

Generating, developing, modelling & communicating ideas

- Generate ideas by drawing on their own experiences.
- Use knowledge of existing ideas to help come up with ideas.
- Develop and communicated ideas by talking and drawing.

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Planning

- Plan by suggesting what to do next.
- Select from a range of tools and equipment, explaining their choices.
- Select from a range of materials and components according to their characteristics

Practical skills and techniques

- Follow procedures for safety and hygiene.
- Use a range of materials and components, including construction materials and kits, textiles, food ingredients and mechanical components.
- Measure, mark out, cut and shape materials and components.
- Assemble, join and combine materials and components.
- Use finishing techniques, including those from art and design.

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Own ideas and products

- Talk about their design ideas and what they are making in some detail.
- Make simple judgements about their products and ideas against design criteria.
- Suggest how their products could be improved.

Existing products

- Explore what products are and who or what they are for.
- Explore how products work and how or where they might be used.
- Explore what materials products are made from and why these choices have been made.
- Explore what they like and dislike about products.

Y1

- Model ideas by exploring materials, components and construction kits and by making templates and mock-ups.
- Use ICT, where appropriate, to develop and show their ideas.



- Planning
- Plan by suggesting what to do next.
 - Select tools and equipment.
 - Select appropriate materials and components.
- Practical skills and techniques
- With assistance, follow procedures for safety and hygiene.
 - Use a range of materials and components, including construction materials.
 - With support, measure, mark out, cut and shape materials and components.
 - With support, assemble, join and combine materials and components.



- Own ideas and products
- Talk about their design ideas and what they are making.
 - Make simple judgements about their products and ideas against design criteria.
 - Say whether they like their design or not and why.
- Existing products
- Explore what products are and who or what they are for.
 - Explore how products work and how or where they might be used.
 - Explore what materials products are made from.
- Explore what they like and dislike about products.



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- Use models, pictures and words to describe what they want to do and achieve.



- Return to and build on their previous learning, refining ideas and developing their ability to represent them.
- Create collaboratively, sharing ideas, resources and skills.
- Know how to use a range of tools safely and effectively



- Talk about their own and others' work critically.



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- Explore different materials freely, 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.



- Join different materials and explore different textures.
- Use tools to affect changes to materials.



- Explain their own models and how they made them.



2YO

- Explore different materials, using all their senses to investigate them.
- Manipulate and play with different materials.

- Make simple models using blocks, dough, and construction blocks e.g. Duplo

- Describe their models.

Technical Knowledge

Y7

- Use learning from science to help design and make products that work
- Use learning from mathematics to help design and make products that work
- Understand the properties of materials, including smart materials, and how they can be used to advantage
- Understand the performance of structural elements to achieve functioning solutions
- Understand how more advanced mechanical systems used in their products enable changes in movement and force
- Know how to competently use a range of cooking techniques
- Know how to classify materials by structure e.g. hard woods, soft woods, ferrous and non-ferrous, thermoplastic and thermosetting plastics
- Know about the physical properties of materials e.g. grain, brittleness, flexibility, elasticity, malleability and thermal
- Know how more advanced electrical and electronic systems can be powered and used in their products
- Know how to use simple electronic circuits incorporating inputs and outputs
- Know about textile fibre sources e.g. natural and synthetic and fabrics
- Know how to select and modify patterns and use in textile construction



Y6

- Use learning from science and maths to help design and make products that work
- Know that materials have both functional properties and aesthetic qualities.
- Know that materials can be combined and mixed to create more useful characteristics.
- Know that mechanical and electrical systems have an input, process and output.
- Know the correct technical vocabulary for the projects they are undertaking how more complex electrical circuits and components can be used to create functional products.
- Know how to program a computer to monitor changes in the environment and control their products.
- Know that a recipe can be adapted by adding or substituting one or more ingredients.



Y5

- Use learning from science and maths to help design and make products that work
- Know that materials can be combined and mixed to create more useful characteristics.
- Know the mechanical and electrical systems have an input, process and output.
- Use the correct technical vocabulary for the projects they are undertaking.
- Know how mechanical systems such as cams or pulleys or gears create movement.
- Know how to program a computer to monitor changes in the environment and control their products.
- Know how to reinforce and strengthen a 3D framework.
- Know that a 3D textiles product can be made from a combination of fabric shapes.
- Know that a recipe can be adapted by adding or substituting one or more ingredients.



Y4

- Understand how to use learning from science and maths to help design and make products that work.
- Know that materials have both functional properties and aesthetic qualities.
- Know that materials can be combined and mixed to create more useful characteristics.
- Know that mechanical and electrical systems have an input, process and output.
- Use the correct technical vocabulary for the projects they are undertaking.
- Know how mechanical systems such as levers and linkages or pneumatic systems create movement.
- Know how simple electrical circuits and components can be used to create functional products.
- Know how to program a computer to control their products.
- Know how to make strong, stiff shell structures.
- Know that a single fabric shape can be used to make a 3D textiles product.
- Know that food ingredients can be fresh, pre-cooked and processed.



Y3

- Know how to use some learning from science and maths to help design.
- Know that materials have functional properties.
- Know that materials can be combined and mixed.
- Know that mechanical have an input, process and output.
- Use some technical vocabulary for the projects they are undertaking.
- Know how mechanical systems such as levers create movement.
- Know how to program a computer to control their products.

Cooking and Nutrition

Where food comes from

- Know that food is produced, processed and sold in different ways, e.g. conventional and organic farming, fair trade
- Know that people choose different types of food and that this may be influenced by availability, season,

Food preparation, cooking and nutrition

- Know how to store, prepare and cook food safely and hygienically
- Know how to select and prepare ingredients
- Know how to use utensils and electrical equipment
- Know how to apply heat in different ways
- Know how to use taste, texture and smell to decide how to season dishes and combine ingredients
- Know how to adapt and use their own recipes
- Know how to cook a repertoire of predominantly savoury dishes to feed themselves and others a healthy and varied diet
- Know the importance of a healthy and varied diet as depicted in The Eatwell plate and Eight tips for healthy eating
- Know that food provides energy and nutrients in different amounts; that they have important functions in the body; and that people require different amounts during their life
- Know how to taste and cook a broader range of ingredients and healthy recipes, accounting for a range of needs, wants and values
- Know how to actively minimise food waste such as composting.



Where food comes from

- Know that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world.
- Know that seasons may affect the food available.
- Know how food is processed into ingredients that can be eaten or used in cooking.

Food preparation, cooking and nutrition

- Know how to prepare and cook predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source.
- Measure ingredients to the nearest gramme and millilitre and calculate ratios for ingredients.
- Confidently use a range of techniques such as peeling, chopping, slicing,
- grating, mixing, spreading, kneading and baking, beating and rubbing.
- Know that recipes can be adapted to change the appearance, taste, texture and aroma.
- Know that different food and drink contain different substances – nutrients, water and fibre – that are needed for health.



Where food comes from

Know that all food comes from plants or animals.
Know that food has to be farmed, grown elsewhere (e.g. home) or caught.

Food preparation, cooking and nutrition

- Know how to name and sort foods into the five groups in The Eat well Plate.
- Know that everyone should eat at least five portions of fruit and vegetables every day.
- Know how to prepare simple dishes safely and hygienically, without using a heat source.
- Know how to use techniques such as cutting, peeling and grating; selecting the best one for the product.



Where food comes from

Know that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world.

Food preparation, cooking and nutrition

- Know how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source.
- Know how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.
- Know that a healthy diet is made up from a variety and balance of different food and drink, as depicted in The Eatwell Plate.
- Know that to be active and healthy, food and drink are needed to provide energy for the body.



Where food comes from

Know that some food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish).

Food preparation, cooking and nutrition

- Know how to prepare and cook a variety of predominantly savoury

- Know how to make strong, stiff shell structures.
- Know that a single fabric shape can be used to make a 3D textiles product.
- Know that food ingredients can be fresh, pre-cooked and processed.



- dishes safely and hygienically including, where appropriate, the use of a heat source.
- Build on knowledge from KS1 to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking
- Know that a healthy diet is made up from a variety and balance of different food and drink, as depicted in The Eat well Plate.



Y2

- Know about the simple working characteristics of materials and components.
- Know that a 3-D textiles product can be assembled from two identical fabric shapes.
- Know about the movement of simple mechanisms such as wheels and axles.
- Know that food ingredients should be combined according to their sensory characteristics.
- Use the correct technical vocabulary for the projects they are undertaking.

- Where food comes from
- Know that all food comes from plants or animals
 - Understand that food has to be farmed, grown elsewhere (e.g. home) or caught.
- Food preparation, cooking and nutrition
- Know how to name and sort foods into the five groups in The Eat Well Plate.
 - Know that everyone should eat at least five portions of fruit and vegetables every day.
 - Know how to prepare simple dishes safely and hygienically, without using a heat source.
 - Know how to use techniques such as cutting, peeling and grating.



Y1

- Know about the simple working characteristics of materials and components.
- Know how freestanding structures can be made stronger, stiffer and more stable.
- Know about the movement of simple mechanisms such as levers and sliders.
- Know that food ingredients should be combined according to their sensory characteristics.
- Use the correct technical vocabulary for the projects they are undertaking.

- Where food comes from
- Know that food comes from plants or animals
 - Know that food comes from different places.
- Food preparation, cooking and nutrition
- Name and group familiar foods e.g. vegetables and fruit.
 - Learn how to prepare simple dishes safely and hygienically, without using a heat source.
 - Know how to use techniques such as cutting, peeling and grating.



R

- Experiment with using different materials and recognise which work best.
- Use the correct technical vocabulary for the projects they are undertaking.

- Know that some foods come from plants
- Start to learn how to prepare simple foods such as fruit.



N

- Be exposed to the correct technical vocabulary for materials and tools.

- Plant seeds and observe them growing over time and then harvest the produced e.g. potatoes to support children's understanding of some foods coming from plants.
- Combine ingredients for an end product.



2YO

- To explore a range of foods and ingredients.