Knowledge Progression in Design & Technology

Key Knowledge Area: Food & Nutrition						
Throughout their school career, a North Downs pupil will…						
Foundation	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year5**	**Year 6**
Begin to understand and use senses. Understand the need for variety in food. Begin to understand healthy eating. Taste and experience a variety of foods. Understand how to be safe and hygienic with food. Begin to understand some food preparation tools, techniques and processes. Practise some basic cooking skills, such as stirring, mixing,	Use senses to describe the texture of foods. Understand that all food comes from plants or animals. Name and sort foods into the five groups (Eatwell Guide). Understand that everyone should eat at least five portions of fruit and vegetables every day. Know to wash hands and clean surfaces before working with food. Design and make a healthy dish. Uses own creative ideas to decorate food.	Describe properties of ingredients and the importance of a varied diet. Identify where food comes from (animal or plant). Understand that food has to be farmed, grown elsewhere (e.g. home) or caught. Explain where in the world different foods originate from and sample a range of foods from around the world. Explain the term 'five a day' and give examples. Explain hygiene and maintain a hygienic kitchen.	Start to understand seasonality; able to match foods to their growing season. Explain that a healthy diet is made up of a variety and balance of different food and drink. Explain how food and drink are needed for active/healthy bodies. Identify ways to cook safely and give examples of good hygiene practice for cooking. Understand how to prepare and cook a variety of predominantly savoury dishes. Plan and cook a variety of dishes,	Use some of the following techniques: peeling, chopping, slicing mashing, whisking, mixing, spreading, grating, kneading and baking. With support, use a heat source to cook ingredients showing awareness of the need to control the temperature of the hob and/or oven. Design and create interesting ways to present their product.	Know, explain and give examples of food that is grown, reared and caught in the UK Understand about seasonality and how this may affect the food availability. Understand that food is processed into ingredients. Explain that foods contain different substances, such as protein, that are needed for health. Describe how recipes can be adapted to change appearance, taste, texture and aroma. Explain how to be safe/hygienic when working with food and	Know, explain and give examples of food that is grown, reared and caught in Europe and the Wider World. Explain and plan recipes according to seasonality. Learn about food processing methods. Describe some of the different substances in food and drink, and how they can affect health. Demonstrate how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source.

pouring, blending and chopping	Practise cutting, peeling and grating, safely and with support.	Design and prepare dishes (linked to their knowledge of the Eatwell Guide). Practise cutting, peeling and grating with increasing confidence.	using their knowledge of the Eatwell Guide. Prepare ingredients using appropriate cooking utensils. Measure and weigh ingredients to the nearest gram and millilitre. Use a range of techniques with growing confidence, such as peeling, chopping, slicing mashing, whisking, mixing, spreading, grating, kneading and baking. Use interesting ideas to make their product look attractive.		demonstrate how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source. Measure accurately and calculate ratios of ingredients. Independently follow a recipe. Use the following techniques: peeling, chopping, slicing mashing, whisking, mixing, spreading, grating, kneading and baking. Demonstrate how to use a range of cooking techniques, such as griddling, grilling, frying and boiling. Present product well, ensuring that it looks interesting, attractive, and is fit for purpose.	Apply knowledge of food substances, such as gluten, to plan and prepare suitable and purposeful dishes. Adapt and refine recipes by adding or substituting one or more ingredients to change the appearance, taste, texture and aroma. Use the following techniques confidently: peeling, chopping, slicing mashing, whisking, mixing, spreading, grating, kneading and baking. Alter methods, cooking times and/or temperature/s. Present product well, ensuring that it looks interesting, attractive, and is fit for purpose.

Key Knowledge Area: Design

Throughout their school career, a North Downs pupil will…

Foundation	Year 1	Year 2	Year 3	Year 4	Year5	Year 6
Select appropriate resources. Use gestures, discussion and arrangements of materials and components to show design. Use contexts set by the teacher and my own interests. Use language of designing and making (join, build, shape, longer, shorter, heavier etc.)	Form own design ideas. Explain what I want to do/create. Explain the purpose of the product, and how it will work. Use pictures and words to plan, and begin to use models. Design a product for myself, following a design criteria. Research similar existing products.	Form own design ideas and plan what to do next. Explain what I want to do/create and describe possible processes. Explain the purpose of the product, how it will work and how it will be suitable for the user. Describe design using pictures, words, models and diagrams, and begin to use ICT. Design products for myself and others, following a design criteria. Choose effective tools and materials, and explain choices. Use knowledge of existing products to produce ideas.	Begin to research others' needs/ideas. Show that design meets a range of requirements/criteria. Be able to describe the purpose of the product. Follow a given design criteria. Have at least one idea about how to create the product. Create a plan which shows order, equipment and tools required. Describe and explain design using an accurately labelled sketch and annotations. Make design decisions with some independence. Explain how the product will work.	Use research for design ideas. Show that the design meets a range of requirements and is fit for purpose. Begin to create own design criteria. Have at least one idea about how to create the product and suggest improvements for design. Produce a plan and explain it to others. Discuss how realistic the plan is. Include an annotated sketch in the design process. Make and explain design decisions considering availability of resources. Explain how the product will work.	Use the internet and questionnaires for research and design ideas. Take a 'user's view' into account when designing. Begin to consider needs/wants of individuals/groups when designing. Ensure product is fit for purpose. Create own design criteria. Have a range of ideas for design. Produce a logical, realistic plan and explain it to others. Use cross-sectional planning and annotated sketches. Make design decisions considering production time and resources.	Draw on market research to inform design. Use research of user's individual needs, wants, requirements for design. Identify features of design that will appeal to the intended user. Create own design criteria and specifications. Come up with innovative design ideas. Follow and refine a logical plan. Use annotated sketches, cross-sectional planning and exploded diagrams. Make design decisions, considering resources and costing. Clearly explain how parts of design will

			Make a prototype/model. Begin to use computer/ICT to show design.	Make a prototype/model. Use computer/ICT to show design.	Clearly explain how parts of the product will work. Model and refine design ideas by making prototypes/models and using pattern pieces. Begin to use computer aided designs.	work, and how they are fit for purpose. Independently model and refine design ideas by making prototypes/models and using pattern pieces. Use computer-aided designs with greater independence and confidence.
Key Knowledge Area: Make						
Throughout their school career, a North Downs pupil will…						
Foundation	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year5**	**Year 6**
Construct with a purpose, using a variety of tools and resources. Use simple tools and techniques. Build / construct with a wide range of objects. Select tools & techniques to shape, assemble and join. Replicate structures using different materials and objects.	Explain what I'm making and the purpose. Consider what I need to do next. Select tools/equipment to cut, shape, join, finish and explain choices made. Measure, mark out, cut and shape, with support. Choose suitable materials and explain choices.	Explain what I am making and how/why it fits the purpose. Make suggestions as to what I need to do next. Join materials/components in a variety of ways. With support, measure, mark out, cut and shape materials and components. Describe which tools they are using and why.	Select suitable tools/equipment and explain choices. Begin to use tools/equipment accurately. Select appropriate materials, fit for purpose. Follow a plan in order. Consider how good the product will be. Begin to measure, mark out, cut and shape materials/components with some accuracy.	Select suitable tools and equipment and explain choices in relation to required techniques. Use tools/equipment accurately and with some independence. Select appropriate materials that are fit for purpose, and explain choices. Follow a plan in order. Consider the expected quality of the finished product.	Use selected tools/equipment with a good level of precision. Produce suitable lists of tools, equipment/materials needed. Select appropriate materials, fit for purpose and explain choices - considering functionality. Create and follow detailed step-by-step plans.	Use selected tools and equipment precisely and accurately. Produce suitable lists of tools, equipment, materials needed, considering possible constraints. Select appropriate materials, fit for purpose; explain choices - considering functionality and aesthetics. Create, follow, and adapt detailed stepby-step plans.

Discuss how to make an activity safe and hygienic. Record experiences by drawing, writing, and through recorded discussions. Understand different media can be combined for a purpose.	Use some finishing techniques to make the product aesthetically pleasing. Work in a safe and hygienic manner.	Choose suitable materials and explain choices depending on characteristics. Use finishing techniques to make the product aesthetically pleasing. Work safely and hygienically.	Begin to assemble, join and combine materials and components with some accuracy. Begin to apply a range of finishing techniques with some accuracy.	Measure, mark out, cut and shape materials/ components with some accuracy. Assemble, join and combine materials and components with some accuracy. Apply a range of finishing techniques with some accuracy.	Explain how the product will appeal to an audience. Measure, mark out, cut and shape materials/components with greater accuracy. Assemble, join and combine materials/components with greater accuracy. Apply a range of finishing techniques with greater accuracy. Use techniques that involve a small number of steps. Begin to be resourceful with practical problems.	Explain how the product will appeal to the audience. Make changes to improve the quality of the product. Accurately measure, mark out, cut and shape materials/components Accurately assemble, join and combine materials/components Accurately apply a range of finishing techniques. Use techniques that involve multiple steps. Be resourceful with practical problems.

Key Knowledge Area: Evaluate

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Adapt work if necessary. Dismantle, examine and talk about	Talk about my product, linking it to what they were asked to do. Talk about existing products considering:	Describe what went well, reflecting on design criteria. Talk about existing products considering: use, materials, how	Look at design criteria while designing and making. Use design criteria to evaluate the finished product.	Refer to design criteria while designing and making. Use design criteria to evaluate product and	Evaluate quality of design while designing and making. Evaluate ideas and finished product against specification,	Evaluate quality of design while designing and making; is it fit for purpose? Keep checking the quality and

existing objects/structures. Consider and manage some risks. Practise some appropriate safety measures independently. Talk about how things work. Look at similarities and differences between existing objects, materials, and/or tools. Show an interest in technological toys. Describe and compare textures.	use, materials, how they work, audience, where they might be used. Talk about existing products, and say what is and isn't effective/successful. Talk about products that other people have made. Begin to talk about how to improve the product.	they work, audience, where they might be used and express personal opinion. Evaluate the effectiveness/success of existing products. Talk about what I would do differently if I were to do it again and why.	Say what I would change to make design/product better. Begin to evaluate existing products, considering: how well they have been made, materials, whether they work, how they have been made, whether they are fit for purpose. Begin to understand by whom, when and where products were designed. Learn about some inventors/designers/ engineers/chefs/ manufacturers of ground-breaking products.	the design and making process. Begin to explain how I could improve original design. Evaluate existing products, considering: how well they've been made, materials, whether they work, how they have been made, whether they are fit for purpose. Discuss by whom, when and where products were designed. Research whether products can be recycled or reused. Know/identify some inventors/designers/ engineers/chefs/ manufacturers of ground breaking products.	considering purpose and appearance. Test and evaluate the final product. Evaluate and discuss existing products, considering: how well they've been made, materials, whether they work, how they have been made, whether fit for purpose. Consider how much products cost to make and evaluate how innovative they are. Research how sustainable materials are. Talk about some key inventors/designers/ engineers/ chefs/manufacturers of ground-breaking products.	effectiveness of the design/product. Evaluate ideas and finished product against specification, stating if it's fit for purpose. Test and evaluate the final product; explain how to improve it and the effect different resources may have had on the final product. Do thorough evaluations of existing products, considering: how well they've been made, materials, whether they work, how they've been made, whether fit for purpose. Find out how much products cost to make and evaluate how innovative they are. Research and discuss how sustainable materials are.

						Consider the impact of products beyond their intended purpose. Discuss and compare some key inventors/designers/ engineers/ chefs/manufacturers of ground-breaking products.
Key Knowledge Area: Technical Knowledge						
Throughout their school career, a North Downs pupil will…						
Foundation	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year5**	**Year 6**
	Materials and Structures Begin to measure and join materials, with some support. Describe differences in materials. Suggest ways to make material/product stronger/stiffer/more stable. **Mechanisms** Begin to use levers or slides. **Textiles** With some support, measure, cut and join textiles to make a product. Choose	**Materials and Structures** Measure materials. Describe some different characteristics of materials. Join materials using different methods. Use joining, rolling or folding to make it stronger/stiffer/more stable. Use own ideas to try to make the product stronger/stiffer/more stable. **Mechanisms**	**Materials and Structures** Use appropriate materials. Work accurately to make cuts and holes. Join materials using different methods. Begin to make strong/stiff/stable structures. Select appropriate tools / techniques. Make alterations to the product, when required, to improve the quality and effectiveness. **Mechanisms**	Materials and Structures Measure carefully to avoid mistakes. Attempt to make the product strong/stiff/stable. Continue working on product with resilience, working through problems faced/design failures. Make a strong, stiff structure. Select most appropriate tools / techniques.	**Materials and Structures** Select materials carefully, considering intended use of product and appearance. Explain how the product meets design criteria. Measure accurately enough to ensure precision. Ensure the product is strong and fit for purpose. Begin to reinforce and strengthen a 3D frame.	**Materials and Structures** Select materials carefully, considering intended use of the product, the aesthetics and functionality. Explain how the product meets design criteria. Reinforce and strengthen a 3D frame. Refine the product after testing, considering aesthetics, functionality and purpose.

	suitable textiles for a product.	Use levers or slides. Begin to understand how to use wheels and axles. **Textiles** Measure textiles. Join textiles to make a product, and explain the making process. Carefully cut textiles to produce accurate pieces. Explain choices of textile. Begin to understand that a 3D textile structure can be made from two identical fabric shapes.	Begin to try new/different ideas. Use simple lever and linkages to create movement. **Textiles** Join textiles in a variety of ways. Choose textiles considering appearance and functionality. Understand that a simple fabric shape can be used to make a 3D textiles project. **Electrical Systems** Use a simple circuit in a product. Learn how to program a computer to control a product.	Explain alterations to the product after checking it. **Mechanisms** Grow in confidence about trying new / different ideas. Use levers and linkages to create movement. Use pneumatics to create movement. **Textiles** Think about the user when choosing textiles. Think about how to make the product strong. Begin to devise a template. Explain how to join things in a different way. Understand that a simple fabric shape can be used to make a 3D textiles project. **Electrical Systems** Use a number of	Refine product after testing. **Mechanisms** Show confidence about trying new / different ideas. Begin to use cams, pulleys or gears to create movement. **Textiles** Think about the user and aesthetics when choosing textiles. Use own template. Think about how to make the product strong and more aesthetically pleasing. Begin to use a range of joining techniques. Begin to understand that a single 3D textiles project can be made from a combination of fabric shapes. **Electrical Systems** Incorporate a switch in the product. Confidently use a number of	**Mechanisms** Incorporate hydraulics and pneumatics. Confidently try new / different ideas. Use cams, pulleys and gears to create movement. **Textiles** Think about the user's wants/needs and aesthetics when choosing textiles. Make the product attractive and strong. Make a prototype. Use a range of joining techniques. Think about how the product might be sold. Think carefully about what would improve the product. Understand that a single 3D textiles project can be made from a combination of fabric shapes.

				components in a circuit. Program a computer to control the product.	components in a circuit. Begin to be able to program a computer to monitor changes in the environment and to control the product.	**Electrical Systems** Use different types of circuit in the product. Think of ways in which adding a circuit would improve the product. Program a computer to monitor changes in the environment and to control the product.