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|   | **Early Years** | **Key Stage 1** | **Lower Key Stage 2** | **Upper Key Stage 2** |
| **Strand** | **Reception** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
|  | . **They safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function**. | * **Design purposeful, functional, appealing products for themselves and other users based on design criteria.**
 | * **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**
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| **Designing** | **Understanding contexts , users and purposes** | * **Talk with children about where they can see models and plans in the environment, such as at the local planning office, in the town square, or at the new apartments down the road.**
* **Make suggestions and ask questions to extend children’s ideas of what is possible, for example, “I wonder what would happen if…”.**
* **Support children in thinking about what they want to make, the processes that may be involved and the materials and resources they might need, such as a photograph to remind them what the climbing frame is like.**
* **Constructs with a purpose in mind, using a variety of resources.**
 | **Across KS1 pupils should:*** **work confidently within a range of contexts, such as imaginary, story-based, home, school, gardens, playgrounds, local community, industry and the wider environment**
* **state what products they are designing and making**
* **say whether their products are for themselves or other users**
* **describe what their products are for**
* **say how their products will work**
* **say how they will make their products suitable for their intended users**
* **use simple design criteria to help develop their ideas**
 | **Across KS2** * **work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment**
* **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**
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| * **gather information about the needs and wants of particular individuals and groups**
* **develop their own design criteria and use these to inform their ideas**
 | * **carry out research, using surveys, interviews, questionnaires and web-based resources**
* **identify the needs, wants, preferences and values of particular individuals and groups**
* **develop a simple design specification to guide their thinking**
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| * **Generate, develop, model and communicate their ideas through talking, drawing, templates, mock ups and, where appropriate, information and communication technology.**
 | **Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.** |
| **Generating, developing, modelling** **and communicating ideas** |
| **Across KS1 pupils should:** * **generate ideas by drawing on their own experiences**
* **use knowledge of existing products to help come up with ideas**
* **develop and communicate ideas by talking and drawing**
* **model ideas by exploring materials, components and construction kits and by making templates and mock- ups**
* **use information and communication technology, where appropriate, to develop and communicate their ideas**
 | **Across KS2 pupils should:** * **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**
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| * **generate realistic ideas, focusing on the needs of the user**
* **make design decisions that take account of the availability of resources**
 | * **generate innovative ideas, drawing on research**
* **make design decisions, taking account of constraints such as time, resources and cost**
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| **Strand** | **Reception** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
|  | * **They safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function**.
 | * **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 wider range of tools and equipment to perform practical tasks (eg: cutting, shaping, joining and finishing), accurately.**
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| **Making** | **Planning** | * **• Demonstrate and teach skills and techniques associated with the things children are doing, for example, show them how to stop the paint from dripping or how to balance bricks so that they will not fall down.**
* **Begin to try out a range of tools and techniques safely.**
* **Join construction pieces together to build and balance.**
* **Realise tools can be used for a purpose.**
* **Investigate various construction materials.**
* **Construct with a purpose in mind, using a variety of resources.**
* **• Selects tools and techniques needed to shape, assemble and join materials they are using**
 | **Across KS1 pupils should:*** **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 characteristic**
 | **Across KS2** * **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**
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| * **order the main stages of making**
 | * **produce appropriate lists of tools, equipment and materials that they need**
* **formulate step-by-step plans as a guide to making**
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| * **Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.**
 | * **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.**
 |
| **Practical skills and techniques** |
| **Across KS1 pupils should:** * **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**
 | **Across KS2 pupils should:** * **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 component**
 |
| * **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**
 | * **accurately measure, mark out, cut and shape materials and components**
* **accurately assemble, join and combine materials and component**
* **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**
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| **Strand** | **Reception** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
|  | * **Explain own knowledge and understanding, and ask appropriate questions of others.**
 | * **Explore and evaluate a range of existing products.**
 | * **Investigate and analyse a range of existing products.**
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| **Evaluating** | **Own ideas and products** | * **Have a ‘holding bay’ where models and works can be retained for a period for children to enjoy, develop, or refer to.**
* **Selects appropriate resources and adapts work where necessary.**
 | **Across KS1 pupils should:*** **talk about their design ideas and what they are making**
* **make simple judgements about their products and ideas against design criteria**
* **suggest how their products could be improved**
 | **Across KS2 pupils should:** * **identify the strengths and areas for development in their ideas and products**
* **consider the views of others, including intended users, to improve their work**
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| * **refer to their design criteria as they design and make**
* **use their design criteria to evaluate their completed products**
 | * **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**
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| * **Evaluate their ideas and products against design criteria.**
 | * **Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.**
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| **Existing products** |
| **Across KS1 pupils should explore:*** **what products are**
* **who products are for**
* **what products are for**
* **how products work**
* **how products are used**
* **where products might be used**
* **what materials products are made from**
* **what they like and dislike about products**
 | * **Across KS2 pupils should investigate and analyse:**
* **how well products have been designed**
* **how well products have been made**
* **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**
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| * **who designed and made the products**
* **where products were designed and made**
* **when products were designed and made**
* **whether products can be recycled or reused**
 | * **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**
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| **Key events and individuals** |  | **Understand how key events and individuals in design and technology have helped shape the world.** | * **Understand how key events and individuals in design and technology have helped shape the world.**
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| **Across KS2 pupils should know:*** **about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products**
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| **Strand** | **Reception** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
|  |  | * **Build structures, exploring how they can be made stronger, stiffer and more stable.**
* **Explore and use mechanisms (eg: levers, sliders, wheels and axles), in their products.**
 | * **apply their understanding of how to strengthen, stiffen and reinforce more complex structures**
* **understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]**
* **understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]**
* **apply their understanding of computing to program, monitor and control their products.**
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| **Technical knowledge** | **Making products work** | * **Investigate various construction materials.**
* **Construct with a purpose in mind, using a variety of resources**
 | **Across KS1 pupils should know:** * **about the simple working characteristics of materials and components**
* **about the movement of simple mechanisms such as levers, sliders, wheels and axles**
* **how freestanding structures can be made stronger, stiffer and more stable**
* **that a 3-D textiles product can be assembled from two identical fabric shapes**
* **that food ingredients should be combined according to their sensory characteristics**
* **the correct technical vocabulary for the projects they are undertaking**
 | **Across KS2 pupils should know:*** **how to use learning from science to help design and make products that work**
* **how to use learning from mathematics to help design and make products that work**
* **that materials have both functional properties and aesthetic qualities**
* **that materials can be combined and mixed to create more useful characteristics**
* **that mechanical and electrical systems have an input, process and output**
* **the correct technical vocabulary for the projects they are undertaking**
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| * **how mechanical systems such as levers and linkages or pneumatic systems create movement**
* **how simple electrical circuits and components can be used to create functional products**
* **how to program a computer to control their products**
* **how to make strong, stiff shell structures**
* **that a single fabric shape can be used to make a 3D textiles product that food ingredients can be fresh, pre-cooked and processed**
 | * **how mechanical systems such as cams or pulleys or gears create movement**
* **how more complex electrical circuits and components can be used to create functional products**
* **how to program a computer to monitor changes in the environment and control their products**
* **how to reinforce and strengthen a 3D framework**
* **that a 3D textiles product can be made from a combination of fabric shapes**
* **that a recipe can be adapted by adding or substituting one or more ingredient**
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|  |  | **Understand and apply the principles of nutrition and learn how to cook.** |
| **Cooking and Nutrition** | **Where food comes from** | * **Manipulates materials to achieve a planned effect.**
* **Uses simple tools and techniques competently and appropriately.**
 | **Across KS1 pupils should know:** * **that all food comes from plants or animals**
* **that food has to be farmed, grown elsewhere (e.g. home) or caught**
 | **Across KS2 pupils should 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**
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|  | **that seasons may affect the food available****how food is processed into ingredients that can be eaten or used in cooking** |
| **Across KS1 pupils should know*** **how to name and sort foods into the five groups in The eatwell plate**
* **that everyone should eat at least five portions of fruit and vegetables every day**
* **how to prepare simple dishes safely and hygienically, without using a heat source**
* **how to use techniques such as cutting, peeling and grating**
 | **Across KS2 pupils should know:****how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source • how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking** |
| **Food preparation, cooking and nutrition** | * **that a healthy diet is made up from a variety and balance of different food and drink, as depicted in The eatwell plate**
* **that to be active and healthy, food and drink are needed to provide energy for the body**
 | * **that recipes can be adapted to change the appearance, taste, texture and aroma**
* **that different food and drink contain different substances – nutrients, water and fibre – that are needed for health**
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