|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Progression in Design and Technology - Skills and Knowledge | | | | | |
| When Designing and making, pupils should be taught to: | | | | | |
| Design | | Make | | Evaluate | |
| 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 | Select from and use a range of tools and equipment to perform practical tasks [for example, 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 | Explore and evaluate a range of existing products | Evaluate their ideas and products against design criteria |

|  | PSED | Physical Development – Gross Motor | Physical Development – Fine Motor | Understanding the World | Expressive Art and Design – Creating with materials | Cooking and Nutrition |
| --- | --- | --- | --- | --- | --- | --- |
| EYFS | 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. | Choose the right resources to carry out their own plan.  Use one-handed tools and equipment, for example, making snips in paper with scissors. Use a comfortable grip with good control when holding pens and  pencils. | Develop their small motor skills so that they can use a range of tools competently, safely and confidently. Suggested tools: pencils for drawing and writing, paintbrushes, scissors, knives, forks and spoons. | Explore how things work. | 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, 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.  Explore, use and refine a variety of artistic effects to express their ideas and feelings.  Create collaboratively, sharing ideas, resources and skills. | Talk about the differences between materials and changes they notice when combining ingredients |

|  | Investigate | Design | Make | Evaluate | Skill Building/Technical Knowledge | Cooking and Nutrition |
| --- | --- | --- | --- | --- | --- | --- |
| **Year 1** | Discuss and experience existing products  Ask simple questions about existing products.  ​ Explore existing products and investigate how they have been made (including teacher-made examples). | ​ Create simple designed using words and pictures  ​ Select pictures to help develop ideas.  ​ Use mock-ups e.g. recycled material trial models to try out their ideas. | ​ Select materials from a limited range.  ​ Explain what they are making.  ​ Name the tools they are using. | ​ Talk about their design as they develop and identify good and bad points.  ​  Say what they like and do not like about items they have made and attempt to say why.  Discuss the making process, the tools involved and how well the product suits its purpose.  Evaluate and assess the product they have made against a simple design criteria. | ​ Start to use technical vocabulary.  ​ Cut out shapes which have been created by drawing round a template.  ​ Join materials in a variety of ways.  ​ Decorate using a variety of techniques.  ​ Know some ways of making structures stronger.  ​ Show how to stiffen some materials. ​ Know how to make a simple structure more stable.  ​ Explore and attach wheels to a chassis using an axle.  ​ Know some different ways of making things move in a 2-D plane.  Explore the use if sliders and levers in their products | ​ Talk about what they eat at home  Begin to discuss what healthy foods are  Group familiar food products e.g. fruit and vegetables.  ​ Cut and chop a range of ingredients.  ​ Work safely and hygienically.  ​ To say where some food comes from  Give some examples of food that is grown |
| **Year 2** | ​Assess existing products.  Decide how existing products do / do not achieve their purpose. | ​ Propose more than one idea for their product.  ​ Use ICT to communicate ideas.  ​ Use drawings to record ideas as they are developed.  ​ Add notes to drawings to help explanations. | ​ Discuss their work as it progresses.  Suggest what to do next  ​ Select and name the tools needed to work the materials.  ​ Explain which materials they are using and why. | ​  ​ Talk about their design as they develop and identify good and bad points.  Say what they like and do not like about items they have made, identifying strengths and possible changes they might make.  Discuss how closely their finished product meets their own design criteria. | Cut, peel, grate, chop a range of ingredients.  ​ Work safely and hygienically.  ​ Know about the Eatwell Plate.  Understand the need for a variety of foods in a diet.  ​ Understand where food comes from – farmed, grown or caught |
| **Year 3** | Investigate and analyse existing products.  Investigate similar products to the one to be made to give starting points for a design.  ​ Research needs of user.  Investigate key events and individuals in design and technology. | ​ Decide which design idea to develop.  Develop more than one design or adaptation of an initial design. ​  Plan a sequence of actions to make a product.  ​ Think ahead about the order of their work and decide upon tools and materials.  ​ Propose realistic suggestions as to how they can achieve their design ideas.  Communicate their ideas through cross-sectional diagrams.  Share and clarify ideas through discussion and generate realistic ideas, focusing on the needs of the user. | ​ Select from a range of tools for cutting, shaping, joining and finishing.  ​  Use tools with accuracy.  ​  Select from materials according to their functional properties.  ​ Use appropriate finishing techniques including those from Art & Design  Assemble, join and combine materials and components accurately, using a range of tools.  Identify improvements and modify design based on feedback. | ​Consider and modify their designs throughout the making process  ​  ​ Discuss how well the finished product meets the user’s design criteria.  Consider and explain how the finished product could be improved.  ​  Analyse products they have made, considering a range of factors and identify the strengths and areas for development in their ideas and products.  ​  Consider the views of others to improve their work | Use an increasingly appropriate technical vocabulary for tools materials and their properties.  ​ Understand seam allowance.  Transfer learning and knowledge from Science and Maths to help design and make products that work.  Learn that materials have both functional properties and aesthetic qualities.  ​ Prototype a product.  ​ Sew on buttons and make loops.  ​ Strengthen frames with diagonal struts.  Apply techniques they have learnt to stiffen, strengthen and reinforce structures and explore their own ideas.  Know how to make strong stiff shell structures.  ​ Measure and mark square section, strip and dowel accurately to 1cm.  ​ Incorporate a circuit into a model.  ​ Use electrical systems such as switches bulbs and buzzers.  ​​ Use linkages /pneumatic systems to make movement larger or more varied | Preparing ingredients hygienically using appropriate utensils  Measure accurately  ​ Make healthy eating choices – use the Eatwell plate.  Understand that different foods and drink provide different substances the body needs to be healthy and active  ​ Understand seasonality.  ​ Know where and how ingredients are grown, reared and caught.  ​ Prepare and cook using different cooking/preparing techniques |
| **Year 4** | Consider how existing products might be improved and how well they meet the needs of the intended user.  Draw / sketch existing products in order to analyse and understand how products are made.  Investigate key events and individuals in design and technology. | ​ Record the plan by drawing using annotated sketches.  ​ Use prototypes to develop and share ideas.  ​ Consider aesthetic qualities of materials chosen.  ​ Use knowledge of existing products to inform design criteria for a functional and appealing product with particular purpose and audience.  Use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas.  Use their knowledge of techniques and the functional and aesthetic qualities of a wide range of materials to plan how to use them and in what order. | ​ Prepare pattern pieces as  templates for their design.  ​  Select from techniques for different parts of the process.  Follow procedures for safety and hygiene.  Safely use tools and techniques which require more accuracy to cut, shape, join and finish work.  Make design decisions that take into account the availability of resources.    Apply appropriate finishing techniques including those from Art & Design | ​ Consider and modify their designs throughout the making process    ​ Identify the strengths and weaknesses of their design ideas in relation to purpose / user by carrying out appropriate tests.  ​ Consider and explain how the finished product could be improved.  Use their design criteria to evaluate their completed products.  ​ Consider the views of others to improve their work |
| **Year 5** | Research and make detailed evaluations about existing products, ​  Investigate key events and individuals in design and technology. | ​Use research into existing products and market research to inform a design criteria for a specific purpose and audience.  Record ideas using annotated diagrams.  Develop a simple design specification to guide their thinking.  ​ Use models, kits and drawings to help formulate design ideas.  ​ Sketch and model alternative ideas.  Create prototypes to develop and show ideas.  ​ Decide which design idea to develop. | ​ Develop one idea in depth  ​  Select from and use a wide range of tools safely.  ​ Cut accurately and safely to a marked line.  Make precise measurements so that joins, seams, holes and openings are in exactly the right place.  ​  Select from and use a wide range of materials.  Use technical knowledge and accurate skills to identify improvements and problem-solve during the making process.  Use techniques that require a number of steps. | Consider, test, assess and modify their design throughout  ​  ​ Consider and explain how the finished product could be improved related to design criteria – make detailed evaluations about their product.  Consider the views of others and decide which to implement to improve their work.  Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make.  Apply experience/knowledge of other products by carrying out appropriate tests. | ​ Use the correct vocabulary appropriate to the project  ​ Join materials using appropriate methods  ​ Create 3D textile products using pattern pieces  ​ Understand pattern layout with textiles  ​ Cut strip, wood, dowel & square section wood accurately to 1mm  ​ Build more complex 3D structures and frameworks to support mechanisms and apply knowledge of a wide range of stiffening, strengthening and reinforcing techniques to make them stronger or more stable.  ​ Use mechanical systems such as cams, pulleys and gears.  ​ Use electrical systems (more complex Y6) such as motors and switches to create functional products.  Learn that mechanical and electrical systems have an input, process and output.  ​  Program, monitor and control using ICT. | ​ Join and combine a widening range of ingredients.  ​ Select and prepare foods for a particular purpose.  ​ Know where and how ingredients are grown and processed.    ​ Understand the main groups and the different nutrients that are important for health  Understand and apply the principles of a healthy and varied diet.  Choose ingredients to support healthy eating choices when designing their savoury food products.  ​ Prepare and cook a variety of mostly savoury dishes using a range of cooking  Techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking |
| **Year 6** | Use their knowledge of famous designs/ designers to further explain the effectiveness of existing productions.  Investigate key events and individuals in design and technology.  Investigate and analyse:  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 | ​ Plan the sequence of work. ​ Devise a simple design specification and step-by-step plan which can be read / followed by someone else.  ​ Use exploded diagrams and cross-sectional diagrams to communicate ideas.  Use research into famous designers and inventors to inform a design criteria for own product with a specific audience in mind.  Make design decisions taking into account constraints such as time, finances etc. | ​ Select from and use a wide range of tools safely.  Make prototypes.  ​  Use researched information to inform decisions.  ​  Produce detailed lists of ingredients / components / materials and tools.  ​  Refine their product – review and rework / improve.    Use technical knowledge and accurate skills to identify improvements and problem-solve during the making process.  Apply knowledge of materials and techniques to refine and rework the product to improve its functional properties and aesthetic qualities. | ​ Identify the strengths and weaknesses of their design ideas.  ​  Report using correct technical vocabulary.  ​ Discuss how well the finished product meets the design criteria having tested on/discussed outcomes with the user.  ​ Understand how key people have influenced design in a variety of contexts – including the effectiveness of their own products.  ​ Consider the views of others and justify which to implement to improve their work. |