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|  | **EYFS** | **Year One** | **Year Two** | **End of KS expectations** | **Year Three** | **Year Four** | **Year Five** | **Year Six** | **End of KS expectations** |
| **Design** | \*Select appropriate resources\*Use gestures, talking and arrangements of materials and components to show design\* Use contexts set by the teacher and myself\*Use language of designing and making (join, build, shape, longer, shorter, heavier etc.) | \* have own ideas\* explain what I want to do\*explain what my product is for, and how it will work \* use pictures and words to plan, begin to use models\* design a product for myself following design criteria\*research similar existing products  | \* have own ideas and plan what to do next\* explain what I want to do and describe how I may do it \* explain purpose of product, how it will work and how it will be suitable for the user \* describe design using pictures, words, models, diagrams, begin to use ICT\* design products for myself and others following design criteria\* choose best tools and materials, and explain choices \* use knowledge of existing products to produce ideas | **\*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**  | \*begin to research others’ needs\* show design meets a range of requirements\* describe purpose of product\* follow a given design criteria\* have at least one idea about how to create product\* create a plan which shows order, equipment and tools\*describe design using an accurately labelled sketch and words\* make design decisions\*explain how product will work \* make a prototype\* begin to use computers to show design | \* use research for design ideas\* show 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 product and suggest improvements for design.\* produce a plan and explain it to others\*say how realistic plan is.\*include an annotated sketch\*make and explain design decisions considering availability of resources\*explain how product will work\* make a prototype\*begin to use computers to show design. | \*use 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 and ensure product is fit for purpose\*create own design criteria\* have a range of ideas\*produce a logical, realistic plan and explain it to others.\*use cross-sectional planning and annotated sketches \* make design decisions considering time and resources.\*clearly explain how parts of product will work.\*model and refine design ideas by making prototypes and using pattern pieces.\*use computer-aided designs  | \* 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 specification\* 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 cost\* clearly explain how parts of design will work, and how they are fit for purpose\* independently model and refine design ideas by making prototypes and using pattern pieces\* use computer-aided designs | ***\*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** | \*Construct with a purpose, using a variety of resources\*Use simple tools and techniques\*Build / construct with a wide range of objects\*Select tools & techniques to shape, assemble and join \*Replicate structures with materials / components\*Discuss how to make an activity safe and hygienic\*Record experiences by drawing, writing, voice recording\*Understand different media can be combined for a purpose | \*explain what I’m making and why\*consider what I need to do next\*select tools/equipment to cut, shape, join, finish and explain choices \*measure, mark out, cut and shape, with support\*choose suitable materials and explain choices\*try to use finishing techniques to make product look good\*work in a safe and hygienic manner  | \*explain what I am making and why it fits the purpose\*make suggestions as to what I need to do next. \*join materials/components together in different ways\*measure, mark out, cut and shape materials and components, with support. \*describe which tools I’m using and why\*choose suitable materials and explain choices depending on characteristics.\*use finishing techniques to make product look good \*work safely and hygienically | **\*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**  | \*select suitable tools/equipment, explain choices; begin to use them accurately\* select appropriate materials, fit for purpose. \* work through plan in order\*consider how good product will be\* begin to measure, mark out, cut and shape materials/components with some accuracy\* begin to assemble, join and combine materials and components with some accuracy\* begin to apply a range of finishing techniques with some accuracy | \* select suitable tools and equipment, explain choices in relation to required techniques and use accurately\*select appropriate materials, fit for purpose; explain choices\* work through plan in order.\* realise if product is going to be good quality\* 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 | \* use selected tools/equipment with good level of precision\* produce suitable lists of tools, equipment/materials needed\*select appropriate materials, fit for purpose; explain choices, considering functionality\* create and follow detailed step-by-step plan\* explain how product will appeal to an audience\* mainly accurately measure, mark out, cut and shape materials/components\*mainly accurately assemble, join and combine materials/components\* mainly accurately apply a range of finishing techniques \* use techniques that involve a small number of steps\* begin to be resourceful with practical problems | \* use selected tools and equipment precisely\*produce suitable lists of tools, equipment, materials needed, considering constraints\* select appropriate materials, fit for purpose; explain choices, considering functionality and aesthetics \* create, follow, and adapt detailed step-by-step plans\*explain how product will appeal to audience; make changes to improve quality\* 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 a number of steps\* be resourceful with practical problems | **\*Select from and use a *wider range of tools and equipment* to perform practical tasks [for example, 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** | \*Adapt work if necessary\*Dismantle, examine, talk about 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 / tools\*Show an interest in technological toys\*Describe textures | \*talk about my work, linking it to what I was asked to do\* talk about existing products considering: use, materials, how they work, audience, where they might be used\*talk about existing products, and say what is and isn’t good \* talk about things that other people have made\*begin to talk about what could make product better | \* describe what went well, thinking about design criteria \* talk about existing products considering: use, materials, how they work, audience, where they might be used; express personal opinion \*evaluate how good existing products are\*talk about what I would do differently if I were to do it again and why | **\*Explore and evaluate a range of existing products** **\*Evaluate their ideas and products against design criteria**  | \* look at design criteria while designing and making\*use design criteria to evaluate finished product\* say what I would change to make design better\*begin to evaluate existing products, considering: how well they have been made, materials, whether they work, how they have been made, 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  | \*refer to design criteria while designing and making \*use criteria to evaluate product\* 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, fit for purpose\* discuss by whom, when and where products were designed\* research whether products can be recycled or reused\* know about some inventors/designers/ engineers/chefs/manufacturers of ground-breaking products | \*evaluate quality of design while designing and making\*evaluate ideas and finished product against specification, considering purpose and appearance. \*test and evaluate final product\* evaluate and discuss existing products, considering: how well they’ve been made, materials, whether they work, how they have been made, fit for purpose\* begin to evaluate how much products cost to make and how innovative they are \*research how sustainable materials are \*talk about some key inventors/designers/ engineers/ chefs/manufacturers of ground-breaking products | \*evaluate quality of design while designing and making; is it fit for purpose?\* keep checking design is best it can be. \*evaluate ideas and finished product against specification, stating if it’s fit for purpose\*test and evaluate final product; explain what would improve it and the effect different resources may have had\*do thorough evaluations of existing products considering: how well they’ve been made, materials, whether they work, how they’ve been made, fit for purpose\*evaluate how much products cost to make and how innovative they are \*research and discuss how sustainable materials are \*consider the impact of products beyond their intended purpose\*discuss some key inventors/designers/ engineers/ chefs/manufacturers of ground-breaking products | ***\*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*** |
| **Development of Technical Knowledge** |
| **Technical knowledge – Materials/structures** |  | \*begin to measure and join materials, with some support\*describe differences in materials \*suggest ways to make material/product stronger | \*measure materials\*describe some different characteristics of materials\*join materials in different ways\*use joining, rolling or folding to make it stronger\*use own ideas to try to make product stronger | **\*Build structures, exploring how they can be made stronger, stiffer and more stable**  | \*use appropriate materials\*work accurately to make cuts and holes\* join materials\*begin to make strong structures  | **\***measure carefully to avoid mistakes\*attempt to make product strong \*continue working on product even if original didn’t work\*make a strong, stiff structure | **\***select materials carefully, considering intended use of product and appearance \*explain how product meets design criteria\*measure accurately enough to ensure precision\*ensure product is strong and fit for purpose\*begin to reinforce and strengthen a 3D frame  | **\***select materials carefully, considering intended use of the product, the aesthetics and functionality. \*explain how product meets design criteria\* reinforce and strengthen a 3D frame | **\*Apply their understanding of how to strengthen, stiffen and reinforce more *complex structures*** |
| **Technical knowledge - Mechanisms** |  | \*begin to use levers or slides  | \*use levers or slides \*begin to understand how to use wheels and axles | **\*Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.**  | \*select appropriate tools / techniques\*alter product after checking, to make it better\*begin to try new/different ideas\*use simple lever and linkages to create movement  | **\***select most appropriate tools / techniques \*explain alterations to product after checking it\*grow in confidence about trying new / different ideas. \*use levers and linkages to create movement\*use pneumatics to create movement | **\***refine product after testing\*grow in confidence about trying new / different ideas\*begin to use cams, pulleys or gears to create movement  | **\***refine product after testing, considering aesthetics, functionality and purpose \*incorporate hydraulics and pneumatics \*be confident to try new / different ideas \*use cams, pulleys and gears to create movement  | **\**Understand* and use mechanical systems in their products [for example, *gears, pulleys, cams,* levers and *linkages*]**  |
| **Technical knowledge - Textiles** |  | \*measure, cut and join textiles to make a product, with some support \*choose suitable textiles | \*measure textiles\*join textiles together to make a product, and explain how I did it\*carefully cut textiles to produce accurate pieces\*explain choices of textile \*understand that a 3D textile structure can be made from two identical fabric shapes. |  | **\***join different textiles in different ways\*choose textiles considering appearance and functionality\*begin to understand that a simple fabric shape can be used to make a 3D textiles project | **\***think about user when choosing textiles\*think about how to make 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 | **\***think about user and aesthetics when choosing textiles**\***use own template\* think about how to make product strong and look better\*think of a range of ways to join things\*begin to understand that a single 3D textiles project can be made from a combination of fabric shapes. | **\***think about user’s wants/needs and aesthetics when choosing textiles\*make product attractive and strong\*make a prototype\*use a range of joining techniques\*think about how product might be sold\*think carefully about what would improve product\*understand that a single 3D textiles project can be made from a combination of fabric shapes.  |  |
| **Technical knowledge – Food and nutrition** | \*Begin to understand some food preparation tools, techniques and processes \*Practise stirring, mixing, pouring, blending\*Discuss how to make an activity safe and hygienic\*Discuss use of senses\*Understand need for variety in food\*Begin to understand that eating well contributes to good health | \*describe textures\*wash hands & clean surfaces \*think of interesting ways to decorate food \*say where some foods come from, (i.e. plant or animal)\*describe differences between some food groups (i.e. sweet, vegetable etc.)\*discuss how fruit and vegetables are healthy\*cut, peel and grate safely, with support | \*explain hygiene and keep a hygienic kitchen\*describe properties of ingredients and importance of varied diet\*say where food comes from (animal, underground etc.)\*describe how food is farmed, home-grown, caught\*draw eat well plate; explain there are groups of food \*describe “five a day”\*cut, peel and grate with increasing confidence | \***Use the basic principles of a healthy and varied diet to prepare dishes****\*Understand where food comes from.**  | **\***carefully select ingredients \*use equipment safely\*make product look attractive \*think about how to grow plants to use in cooking \*begin to understand food comes from UK and wider world\*describe how healthy diet= variety/balance of food/drinks\*explain how food and drink are needed for active/healthy bodies.\*prepare and cook some dishes safely and hygienically \*grow in confidence using some of the following techniques: peeling, chopping, slicing, grating, mixing, spreading, kneading and baking | **\***explain how to be safe/hygienic\*think about presenting product in interesting/ attractive ways\*understand ingredients can be fresh, pre-cooked or processed\*begin to understand about food being grown, reared or caught in the UK or wider world\*describe eat well plate and how a healthy diet=variety / balance of food and drinks\*explain importance of food and drink for active, healthy bodies\*prepare and cook some dishes safely and hygienically\*use some of the following techniques: peeling, chopping, slicing, grating, mixing, spreading, kneading and baking | **\***explain how to be safe / hygienic and follow own guidelines \*present product well - interesting, attractive, fit for purpose\*begin to understand seasonality of foods\*understand food can be grown, reared or caught in the UK and the wider world\*describe how recipes can be adapted to change appearance, taste, texture, aroma\*explain how there are different substances in food / drink needed for health \*prepare and cook some savoury dishes safely and hygienically including, where appropriate, use of heat source\* use range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. | **\***understand a recipe can be adapted by adding / substituting ingredients\*explain seasonality of foods\*learn about food processing methods \*name some types of food that are grown, reared or caught in the UK or wider world \*adapt recipes to change appearance, taste, texture or aroma.\*describe some of the different substances in food and drink, and how they can affect health\*prepare and cook a variety of savoury dishes safely and hygienically including, where appropriate, the use of heat source. \*use a range of techniques confidently such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. | **\**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.***  |
| **Technical knowledge – Electrical systems Computer control and monitoring** |  |  |  |  | \*use simple circuit in product\*learn about how to program a computer to control product.  | \*use number of components in circuit\*program a computer to control product | \*incorporate switch into product\*confidently use number of components in circuit**\***begin to be able to program a computer to monitor changes in environment and control product | \*use different types of circuit in product\* think of ways in which adding a circuit would improve product\* program a computer to monitor changes in environment and control product | ***\*Understand and use electrical systems in their products [for example, series circuits*** |