**crest**

**ST CHARLES’ CATHOLIC PRIMARY SCHOOL**

**DT PROGRESSION OF SKILLS, KNOWLEDGE AND VOCABULARY**

**crest**

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|  | **EYFS** | **YEAR 1** | **YEAR 2** | **YEAR 3** | **YEAR 4** | **YEAR 5** | **YEAR 6** |
| **STRUCTURES** | | | | | | |
| **DESIGN** |  | Learning the importance of a clear design criteria  Including individual preferences and requirements in a design | Generating and communicating ideas using sketching and modelling  Learning about different types of structures, found in the natural world and in everyday objects | Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to  create a desired effect  Building frame structures designed to support weight |  | Designing a stable structure that is able to support weight  Creating frame structure with focus on triangulation |  |
| **MECHANISMS / MECHANICAL SYSTEMS** | | | | | | |
|  |  | Creating a class design criteria for a moving  monster  Designing a moving monster for a specific  audience in accordance with a design criteria | Designing a shape that reduces air resistance    Drawing a net to create a structure from    Choosing shapes that increase or decrease speed as a result of air resistance    Personalising a design |  | Designing a pop-up book which uses a mixture of structures and mechanisms  Naming each mechanism, input and output accurately  Storyboarding ideas for a book |  |
| **ELECTIRICAL SYSTEMS (KS2 ONLY)** | | | | | | |
|  |  |  |  | Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas |  | Designing a steady hand game - identifying and naming the components required  Drawing a design from three different perspectives  Generating ideas through sketching and discussion  Modelling ideas through prototypes  Understanding the purpose of products (toys), including what is meant by ‘fit for purpose’ and ‘form over function’ |
| **COOKING AND NUTRITION** | | | | | | |
|  | Designing smoothie carton packaging by-hand or on ICT software | Designing a healthy wrap based on a food combination which work well together | Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients,  considering the taste, texture, smell and appearance of the dish |  | Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients  Writing an amended method for a recipe to incorporate the relevant changes to ingredients  Designing appealing packaging to reflect a recipe | Writing a recipe, explaining the key steps, method and ingredients  Including facts and drawings from research undertaken |
| **TEXTILES** | | | | | | |
|  | Using a template to create a design for a puppet |  |  | Writing design criteria for a product, articulating decisions made  Designing a personalised Book sleeve |  | Designing a stuffed toy considering the main component shapes required and creating an appropriate template  Considering the proportions of individual components |
| **DIGITAL WORLD (KS2 ONLY)** | | | | | | |
|  |  |  |  | Problem solving by suggesting potential features on a Micro: bit and justifying my ideas  Developing design ideas for a technology pouch  Drawing and manipulating 2D shapes, using computer-aided design, to produce a point of sale  badge |  |  |
|  | **EYFS** | **YEAR 1** | **YEAR 2** | **YEAR 3** | **YEAR 4** | **YEAR 5** | **YEAR 6** |
| **MAKE** | **STRUCTURES** | | | | | | |
| Explore, use and refine a variety of artistic effects to express their ideas and feelings.  Return to and build on their previous learning, refining ideas and developing their ability to represent them.  Progress towards a more fluent style of moving, with developing control and grace.  Develop their small motor skills so that they can use a range of tools competently, safely and confidently.  Use their core muscle strength to achieve a good posture when sitting at a table or sitting on the floor.  Create collaboratively, sharing ideas, resources and skills.  **ELG**  Use a range of small tools, including scissors, paintbrushes and cutlery. | Making stable structures from card, tape and glue  Following instructions to cut and assemble the supporting structure of a windmill  Making functioning turbines and axles which are assembled into a main supporting structure | Making a structure according to design criteria  Creating joints and structures from paper/card and tape | Creating a range of different shaped frame structures  Making a variety of free standing frame structures of different shapes and sizes  Selecting appropriate materials to build a strong structure and for the cladding  Reinforcing corners to strengthen a structure  Creating a design in accordance with a plan  Learning to create different textural effects with materials |  | Making a range of different shaped beam bridges  Using triangles to create truss bridges that span a given distance and supports a load  Building a wooden bridge structure Independently measuring and marking wood accurately  Selecting appropriate tools and equipment for particular tasks  Using the correct techniques to saws safely  Identifying where a structure needs reinforcement and using card corners for support  Explaining why selecting appropriating materials is an important part of the design process  Understanding basic wood |  |
| **MECHANISMS / MECHANICAL SYSTEMS** | | | | | | |
|  |  | Making linkages using card for levers and  split pins for pivots  Experimenting with linkages adjusting the  widths, lengths and thicknesses of card used  Cutting and assembling components neatly | Measuring, marking, cutting and assembling with increasing accuracy  Making a model based on a chosen design |  | Following a design brief to make a pop-up book, neatly and with focus on accuracy  Making mechanisms and/or structures using sliders, pivots and folds to produce movement  Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result |  |
| **ELECTIRICAL SYSTEMS (KS2 ONLY)** | | | | | | |
|  |  |  |  | Making a torch with a working electrical circuit and switch  Using appropriate equipment to cut and attach materials  Assembling a torch according to the design and success criteria |  | Constructing a stable base for a game  Accurately cutting, folding and assembling a net  Decorating the base of the game to a high quality finish  Making and testing a circuit Incorporating a circuit into a base |
| **COOKING AND NUTRITION** | | | | | | |
|  | Chopping fruit and vegetables safely to make a smoothie  Identifying if a food is a fruit or a vegetable  Learning where and how fruits and vegetables grow | Slicing food safely using the bridge or claw grip  Constructing a wrap that meets a design brief | Knowing how to prepare themselves and a work space to cook safely in, learning the basic  rules to avoid food contamination  Following the instructions within a recipe |  | Cutting and preparing vegetables safely  Using equipment safely, including knives, hot pans and hobs  Knowing how to avoid cross-contamination  Following a step by step method carefully to make a recipe | Following a recipe, including using the correct quantities of each ingredient  Adapting a recipe based on research  Working to a given timescale  Working safely and hygienically with independence |
| **TEXTILES** | | | | | | |
|  | Cutting fabric neatly with scissors  Using joining methods to decorate a puppet  Sequencing steps for construction |  |  | Making and testing a paper template with accuracy and in keeping with the design criteria  Measuring, marking and cutting fabric using a paper template  Selecting a stitch style to join fabric, working neatly sewing small neat stitches  Incorporating fastening to a design |  | Creating a 3D stuffed toy from a 2D design  Measuring, marking and cutting fabric accurately and independently  Creating strong and secure blanket stitches when joining fabric  Using applique to attach pieces of fabric decoration |
| **DIGITAL WORLD (KS2 ONLY)** | | | | | | |
|  |  |  |  | Using a template when cutting and assembling the pouch  Following a list of design requirements  Selecting and using the appropriate tools and equipment for cutting, joining, shaping and  decorating a foam pouch  Applying functional features such as using foam to create soft buttons |  |  |
|  | **EYFS** | **YEAR 1** | **YEAR 2** | **YEAR 3** | **YEAR 4** | **YEAR 5** | **YEAR 6** |
| **EVALUATE** | **STRUCTURES** | | | | | | |
| **ELG**  Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. Share their  creations, explaining the process they have used. | Evaluating a windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn’t  Suggest points for improvements | Exploring the features of structures  Comparing the stability of different shapes  Testing the strength of own structures  Identifying the weakest part of a structure  Evaluating the strength, stiffness and stability of own structure | Evaluating structures made by the class  Describing what characteristics of a design and construction made it the most effective  Considering effective and ineffective designs |  | Adapting and improving own bridge structure by identifying points of weakness and reinforcing them as necessary  Suggesting points for improvements for own bridges and those designed by others |  |
| **MECHANISMS / MECHANICAL SYSTEMS** | | | | | | |
|  |  | Evaluating own designs against design  criteria  Using peer feedback to modify a final  design | Evaluating the speed of a final product based on: the effect of shape on speed and the  accuracy of workmanship on performance |  | Evaluating the work of others and receiving feedback on own work  Suggesting points for improvement |  |
| **ELECTIRICAL SYSTEMS (KS2 ONLY)** | | | | | | |
|  |  |  |  | Evaluating electrical products  Testing and evaluating the success of a final product and taking inspiration from the work of peers |  | Testing own and others finished games, identifying what went well and making suggestions for improvement  Gathering images and information about existing children’s toys  Analysing a selection of existing children’s toys |
| **COOKING AND NUTRITION** | | | | | | |
|  | Tasting and evaluating different food combinations  Describing appearance, smell and taste  Suggesting information to be included on packaging | Describing the taste, texture and smell of fruit and vegetables  Taste testing food combinations and final products  Describing the information that should be included on a label  Evaluating which grip was most effective | Establishing and using design criteria to help test and review dishes  Describing the benefits of seasonal fruits and vegetables and the impact on the environment  Suggesting points for improvement when making a seasonal tart |  | Identifying the nutritional differences between different products and recipes  Identifying and describing healthy benefits of food groups | Evaluating a recipe, considering: taste, smell, texture and origin of the food group  Taste testing and scoring final products  Suggesting and writing up points of improvements in productions  Evaluating health and safety in production to minimise cross |
| **TEXTILES** | | | | | | |
|  | Reflecting on a finished product, explaining likes and dislikes |  |  | Testing and evaluating an end product against the original design criteria  Deciding how many of the criteria should be met for the product to be considered successful  Suggesting modifications for improvement |  | Testing and evaluating an end product and giving point for further improvements |
| **DIGITAL WORLD (KS2 ONLY)** | | | | | | |
|  |  |  |  | Analysing and evaluating an existing product  Identifying the key features of a pouch |  |  |
|  | **EYFS** | **YEAR 1** | **YEAR 2** | **YEAR 3** | **YEAR 4** | **YEAR 5** | **YEAR 6** |
| **TECHNICAL KNOWLEDGE** | **STRUCTURES** | | | | | | |
|  | Describing the purpose of structures, including windmills  Learning how to turn 2D nets into 3D structures  Learning that the shape of materials can be changed to improve the strength and stiffness of structures  Understanding that cylinders are a strong type of structure that are often used for windmills and lighthouses  Understanding that windmill turbines use wind to turn and make the machines inside work  Understanding that axles are used in structures and mechanisms to make parts turn in a circle  Developing awareness of different structures for different purposes | Identifying natural and man-made structures  Identifying when a structure is more or less stable than another  Knowing that shapes and structures with wide, flat bases or legs are the most stable  Understanding that the shape of a structure affects its strength  Using the vocabulary: strength, stiffness and stability  Knowing that materials can be manipulated to improve strength and stiffness  Building a strong and stiff structure by folding paper | To understand what a frame structure is  To know that a ‘free-standing’ structure is one which can stand on its own  To know that a pavilions ia a decorative building or structure for leisure activities  To know that cladding can be applied to structures for different effects.  To know that aesthetics are how a product looks  To know that a product’s function means its purpose  To understand that the target audience means the person or group of people a product is  designed for  To know that architects consider light, shadow and patterns when designing |  | Exploring how to create a strong beam Identifying arch and beam bridges and understanding the terms: compression and tension  Identifying stronger and weaker structures  Finding different ways to reinforce structures  Understanding how triangles can be used to reinforce bridges  Articulating the difference between beam, arch, truss and suspension bridges |  |
| **MECHANISMS / MECHANICAL SYSTEMS** | | | | | | |
|  |  | To know that mechanisms are a collection  of moving parts that work together as a  machine to produce movement  To know that there is always an input and  output in a mechanism  To know that an input is the energy that is  used to start something working  To know that an output is the movement  that happens as a result of the input  To know that a lever is something that  turns on a pivot  To know that a linkage mechanism is made  up of a series of levers  To know some real-life objects that contain  mechanisms | To understand that all moving things have kinetic energy  To understand that kinetic energy is the energy that something (object/person) has by being  in motion  To know that air resistance is the level of drag on an object as it is forced through the air  To understand that the shape of a moving object will affect how it moves due to air resistance**.**  To understand that products change and evolve over time  To know that aesthetics means how an object or product looks in design and technology  To know that a template is a stencil you can use to help you draw the same shape accurately  To know that a birds-eye view means a view from a high angle (as if a bird in flight)  To know that graphics are images which are designed to explain or advertise something  To know that it is important to assess and evaluate design ideas and models against a list of  design criteria. |  | Knowing that an input is the motion used to start a mechanism  Knowing that output is the motion that happens as a result of starting the input  Knowing that mechanisms control movement  Describing mechanisms that can be used to change one kind of motion into another |  |
| **ELECTIRICAL SYSTEMS (KS2 ONLY)** | | | | | | |
|  |  |  |  | Learning how electrical items work  Identifying electrical products  Learning what electrical conductors and insulators are  Understanding that a battery contains stored electricity and can be used to power products  Identifying the features of a torch  Understanding how a torch works  Articulating the positives and negatives aboutdifferent torches |  | Learning that batteries contain acid, which can be dangerous if they leak  Identifying and naming the circuit components in a steady hand game |
| **COOKING AND NUTRITION** | | | | | | |
|  | Understanding the difference between fruits and vegetables  Describing and grouping fruits by texture and taste | Understanding what makes a balanced diet  Knowing where to find the nutritional information on packaging  Knowing the five food groups | To know that not all fruits and vegetables can be grown in the UK  To know that climate affects food growth  To know that vegetables and fruit grow in certain seasons  To know that cooking instructions are known as a ‘recipe’  To know that imported food is food which has been brought into the country  To know that exported food is food which has been sent to another country.  To understand that imported foods travel from far away and this can negatively impact the  environment  To know that each fruit and vegetable gives us nutritional benefits because they contain  vitamins, minerals and fibre  To understand that vitamins, minerals and fibre are important for energy, growth and  maintaining health  To know safety rules for using, storing and cleaning a knife safely  To know that similar coloured fruits and vegetables often have similar nutritional benefits |  | Understanding where food comes from - learning that beef is from cattle and how beef is reared and processed  Understanding what constitutes a balanced diet  Learning to adapt a recipe to make it healthier  Comparing two adapted recipes using a nutritional calculator and then identifying the healthier option | Learning how to research a recipe by ingredient  Recording the relevant ingredients and equipment needed for a recipe  Understanding the combinations of food that will complement one another  Understanding where food comes from, describing the process of ‘Farm to Fork’ for a given ingredient |
| **TEXTILES** | | | | | | |
|  |  |  |  | Testing and evaluating an end product against the original design criteria  Deciding how many of the criteria should be met for the product to be considered successful  Suggesting modifications for improvement |  | Testing and evaluating an end product and giving point for further improvements |
| **DIGITAL WORLD (KS2 ONLY)** | | | | | | |
|  |  |  |  | To understand that in programming a ‘loop’ is code that repeats something again and again  until stopped  To know that a Micro:bit is a pocket-sized, codeable computer  Writing a program to control (button press) and/or monitor (sense light) that will initiate a  flashing LED algorithm  To know what the ‘Digital Revolution’ is and features of some of the products that have  evolved as a result  To know that in Design and technology the term ‘smart’ means a programmed product  To know the difference between analogue and digital technologies  •  To understand what is meant by ‘point of sale display’  To know that CAD stands for Computer-aided design |  |  |