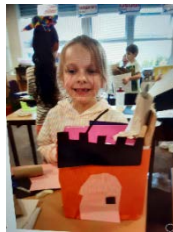
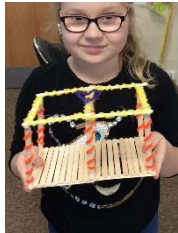


| Design and Technology  |              | Structures                                                                                                                             |                                                                                                                               |                                                                                                                                                                   |                                                                                                                                                                                                   |                                                                                                                                                                                                          |                                                                                                                                                                                    |                                                                                                                                                          |                                                                                                                                                                                                                                                           |
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|                        |              | EYFS                                                                                                                                   |                                                                                                                               | Key Stage 1                                                                                                                                                       |                                                                                                                                                                                                   | Key Stage 2                                                                                                                                                                                              |                                                                                                                                                                                    |                                                                                                                                                          |                                                                                                                                                                                                                                                           |
|                        |              | Nursery                                                                                                                                | Reception                                                                                                                     | Year 1                                                                                                                                                            | Year 2                                                                                                                                                                                            | Year 3                                                                                                                                                                                                   | Year 4                                                                                                                                                                             | Year 5                                                                                                                                                   | Year 6                                                                                                                                                                                                                                                    |
| Progression Document   |              | Can you make a bed for Goldilocks?                                                                                                     | Can you make a bridge to hold the Three Billy Goats Gruff?                                                                    | Windmills                                                                                                                                                         | Baby Bear's Chair                                                                                                                                                                                 | Castles<br>(Investigate 3D shapes and nets to form strong and stable structures)                                                                                                                         | Pavilions                                                                                                                                                                          | Bridges                                                                                                                                                  | Playground<br>(Omit)                                                                                                                                                                                                                                      |
| Previous Skills Taught | End Product  |                                                       |                                              |                                                                                 |                                                                                                                |                                                                                                                       |                                                                                                 |                                                                       |                                                                                                                                                                        |
|                        | Design brief | To design and make a bed for a toy(Goldilocks). It must be strong enough and big enough so that it holds Goldilocks and doesn't break. | To design and make a bridge so that it is strong and stable so three plastic billy goats can stand on it without it breaking. | To design and make a windmill for a client(mouse). The windmill should stand up on its own, be decorated for its owner, have 3 moving parts and turn in the wind. | To design and make a new chair for baby bear (a selected teddy). The chair needs to stand up on its own, be strong so it doesn't break when the bear sits on it and be stiff and not bend easily. | To design and make a model of a castle with a specific person in mind( a flag made for that person) The castle must be strong and stable, made from 3D shapes, nets and packaging and have a drawbridge. | To design and make a pavillion for a target audience (appealing and a particlar theme) The pavillion will have a frame structure, fit on an A4 base, is open but provides shelter. | To design and make truss bridges from different materials and shapes. To reinforce and increase its strengthand stability to withstand a certain weight. | The headteacher has challenged you to design a new playground. It must have a minimum of 3 different structures. It must be safe, fun, have something to climb on, somewhere to hide, something that moves and have space around each piece of apparatus. |
|                        | Design       | -Design a bed big enough to hold Goldilocks.<br>-Name and talk about the materials it will be made from.                               | -Design a bridge, naming and labelling the materials it will be made out of.<br>-Begin to develop an understanding of how     | • Describe purpose of structures.<br>• Importance of clear design criteria.                                                                                       | • Identify natural and manmade structures.<br>• Structures with wide, flat bases or                                                                                                               | • Design a castle with key features for a specific purpose.<br>• Draw and label design using 2D                                                                                                          | • Design a stable pavilion structure is aesthetically pleasing and selecting materials                                                                                             | • Design stable structure that can support weight.<br>• Focus on triangulation.                                                                          | • Use a variety of different structures that meet the purpose.                                                                                                                                                                                            |

|  |                   |                                                                                                         |                                                                                                                                                                                                                                                         |                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                         |
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|  |                   |                                                                                                         | to strengthen their creations to hold the weight of the model goats.                                                                                                                                                                                    | <ul style="list-style-type: none"> <li>• Understand what a net is.</li> <li>• Understand the word stable.</li> <li>• Use shape to improve strength and stiffness. (cylinders)</li> </ul> | legs are the most stable. <ul style="list-style-type: none"> <li>• Fold paper in different ways to improve strength and stiffness.</li> </ul>                                                                                                                                                        | shapes including materials and colours. <ul style="list-style-type: none"> <li>• Use CAD software to design.(Net creation using Computer Aided Design)</li> </ul>                                                                                                                  | to meet the purpose. <ul style="list-style-type: none"> <li>• Build frame structures designed to support weight.</li> </ul>                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>• Consider effective and ineffective designs.</li> </ul>                                                                                                                                                                         |
|  | <b>Make</b>       | -Make a bed using junk modelling or construction materials. Join materials together using tape or glue. | Make a bridge using junk modelling or construction materials. Join chosen materials together using tape or glue. Assembling construction resources (lego, large bricks) by interlocking rather than stacking to improve the stability of the structure. | <ul style="list-style-type: none"> <li>• Make a stable structure using card, tape and glue.</li> <li>• Cut and assemble.</li> <li>• Make functioning turbines and axles.</li> </ul>      | <ul style="list-style-type: none"> <li>• Build a strong and stable structure by folding paper.</li> <li>• Create joints using paper, card and tape.</li> </ul>                                                                                                                                       | <ul style="list-style-type: none"> <li>• Construct 3D geometric shapes using nets.</li> <li>• Create special features for individual designs.</li> <li>• Make facades from recycled materials.</li> <li>• Cutting and folding.</li> <li>• Create tabs the correct size.</li> </ul> | <ul style="list-style-type: none"> <li>• Variety of free standing frame structures of different shapes and sizes.</li> <li>• Select appropriate materials for cladding.</li> <li>• Reinforce corners to strengthen.</li> <li>• Follow design plan.</li> <li>• Create different textural effects with materials.</li> </ul> | <ul style="list-style-type: none"> <li>• Use triangles for truss bridges that support a load.</li> <li>• Measure and mark wood accurately.</li> <li>• Use correct technique to saw safely.</li> <li>• Build frame structures designed to support weight.</li> <li>• Use card corners to reinforce support.</li> </ul> | <ul style="list-style-type: none"> <li>• Build a range of play apparatus using new and prior knowledge of structures.</li> <li>• Measure, mark and cut wood.</li> <li>• Use a range of materials to reinforce strength considering shape and add decoration.</li> </ul> |
|  | <b>Evaluation</b> | Evaluate the size of the structure/bed. Was it big enough to fit Goldilocks inside?                     | -Evaluate the strength of the structure. Did it hold all three goats? If not, what could you do to improve your bridge?                                                                                                                                 | <ul style="list-style-type: none"> <li>• Evaluate strength and stability of structure.</li> <li>• Suggest points for improvement.</li> </ul>                                             | <ul style="list-style-type: none"> <li>• Identify when a structure is more or less stable than another.</li> <li>• Test the strength of own structure.</li> <li>• Identify the weakest part of the structure.</li> <li>• Evaluate the strength, stiffness and stability of own structure.</li> </ul> | <ul style="list-style-type: none"> <li>• Evaluate own work and others based on aesthetic of finished product comparing to original design.</li> <li>• Suggest points for modification.</li> </ul>                                                                                  | <ul style="list-style-type: none"> <li>• Evaluate class's structures.</li> <li>• Describe characteristics that made structure most effective.</li> <li>• Consider effective and ineffective designs.</li> </ul>                                                                                                            | <ul style="list-style-type: none"> <li>• Identify points of weakness and reinforce them. (Adapt and improve)</li> <li>• Suggest improvements to peers.</li> </ul>                                                                                                                                                     | <ul style="list-style-type: none"> <li>• Improve a design plan based on peer evaluation.</li> <li>• Test and adapt a design to improve as it is developed.</li> <li>• Identify what makes a successful structure.</li> </ul>                                            |

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|  | <b>Technical Knowledge</b>    | <ul style="list-style-type: none"> <li>-Features of a bed (legs, base).</li> <li>-Understand that materials can be joined together to make a structure.</li> </ul> | <ul style="list-style-type: none"> <li>-Types of bridge.</li> <li>-Features of a bridge.</li> <li>-Develop and awareness of how to strengthen their structures – interlocking lego bricks rather than stacking for example.</li> </ul> | <ul style="list-style-type: none"> <li>• To understand that the shape of materials can be changed to improve the strength and stiffness of structures</li> <li>• To understand that cylinders are a strong type of structure (e.g. the main shape used for windmills and lighthouses)</li> <li>• To understand that axles are used in structures and mechanisms to make parts turn in a circle</li> <li>• To begin to understand that different structures are used for different purposes</li> <li>• To know that a structure is something that has been made and put together</li> </ul> | <ul style="list-style-type: none"> <li>• To know that shapes and structures with wide, flat bases or legs are the most stable</li> <li>• To understand that the shape of a structure affects its strength</li> <li>• To know that materials can be manipulated to improve strength and stiffness</li> <li>• To know that a structure is something which has been formed or made from parts</li> <li>• To know that a 'stable' structure is one which is firmly fixed and unlikely to change or move</li> <li>• To know that a 'strong' structure is one which does not break easily</li> <li>• To know that a 'stiff' structure or material is one which does not bend easily</li> </ul> | <ul style="list-style-type: none"> <li>• To understand that wide and flat based objects are more stable</li> <li>• To understand the importance of strength and stiffness in structures</li> </ul>                              | <ul style="list-style-type: none"> <li>• To understand what a frame structure is</li> <li>• To know that a 'free-standing' structure is one which can stand on its own</li> </ul>                                                | <ul style="list-style-type: none"> <li>• To understand some different ways to reinforce structures</li> <li>• To understand how triangles can be used to reinforce bridges</li> <li>• To know that properties are words that describe the form and function of materials</li> <li>• To understand why material selection is important based on their properties</li> <li>• To understand the material (functional and aesthetic) properties of wood</li> </ul> | <ul style="list-style-type: none"> <li>• To know that structures can be strengthened by manipulating materials and shapes</li> </ul>                                                                          |
|  | <b>Additional information</b> |                                                                                                                                                                    |                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>• To know that a client is the person I am designing for</li> <li>• To know that design criteria is a list of points to ensure the product meets the clients needs and wants</li> <li>• To know that a windmill harnesses the power of wind for a purpose like</li> </ul>                                                                                                                                                                                                                                                                           | <ul style="list-style-type: none"> <li>• To know that natural structures are those found in nature</li> <li>• To know that man-made structures are those made by people</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <p>To know- Features of a castle and their purpose- flags, towers, battlements, turrets, curtain walls, moat, drawbridge and gatehouse. The façade is the front of the structure. A castle needs to be strong and stable to</p> | <p>To know- A pavilion is a decorative building or structure for leisure activities. Cladding can be applied to structures for different effects. Aesthetics are how a product looks. A products function means its purpose.</p> | <p>To understand the difference between arch beam truss and suspension bridges. To understand how to carry and use a saw safely.</p>                                                                                                                                                                                                                                                                                                                           | <p>To understand what a footprint plan is. To understand that in the real world, design, can impact users in positive and negative ways. To know that a prototype is a cheap model to test a design idea.</p> |

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|  |  |  |  | <p>grinding grain, pumping water or generating electricity • To know that windmill turbines use wind to turn and make the machines inside work • To know that a windmill is a structure with sails that are moved by the wind • To know the three main parts of a windmill are the turbine, axle and structure</p> |  | <p>withstand enemy attack.<br/>A paper net is a flat 2D shape that came become a 3D shape once assembled.<br/>A design specification is a list of success criteria for a product.</p> | <p>A target audience means the person or group of people a product is designed for.<br/>An architect considers light, shadow and patterns when designing.</p> |  |  |
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