|  |  |  |  |
| --- | --- | --- | --- |
| **DT Year 6 Structures Block D** | | | |
| **National Curriculum - Key Stage 2**  Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment]. When designing and making, pupils should be taught to:   * **Design** 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** 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** 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 * **Technical knowledge** 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. | | | |
|  | Lesson 1 | Lesson 2 | Lesson 3 |
| **Learning intention** | How strong is a piece of spaghetti? | How strong is a piece of spaghetti? | How strong is a piece of spaghetti? |
| **Skills taught** |  | Can make adaptations to a structure to improve its stability | Can apply learned techniques and knowledge of structural features to construct a stable tower  Can, during construction, identify how stability can be increased and make the necessary modifications |
| **Recall and retrieval** | Identify forces that affect structures such as gravity, compression and tension | Identify how positioning and the addition of compression affect the strength and stability of spaghetti | Create additional support for structures  Use triangles to provide strength and stability in a structure  Construct flying buttresses to distribute the weight of a structure |
| **Sequence of knowledge throughout the lesson** | **Key knowledge**  Can use a systematic approach to test spaghetti for its strength and stability  Can identify that methods of binding and the use of compression affect the amount of weight spaghetti will hold  Can interpret results, draw conclusions and explain reasoning | **Key knowledge**  Can identify shapes that provide strength and stability to a structure  Can use technical vocabulary when explaining structural features, outcomes and conclusions from investigations | **Key knowledge**  Can explain how to use guy lines to achieve greater stability |
| **Scaffolding** | Working Examples  Visual steps to success  Teacher support | Working Examples  Visual steps to success  Teacher support | Working Examples  Visual steps to success  Teacher support |
| **Challenge** |  |  |  |
| **Key Vocabulary** | Guyed Mast  Flying Buttress  Load  Aesthetic  Edifice  Constraints | Guyed Mast  Flying Buttress  Load  Aesthetic  Edifice  Constraints | Guyed Mast  Flying Buttress  Load  Aesthetic  Edifice  Constraints |