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MEDIUM TERM PLAN

TERM: Autumn 2	YEAR GROUP: 3	SUBJECT: DT – Mechanical Systems

WEEK 1 DATE: 02.09 Exploring Pneumatics	WEEK 2 DATE: 09.09 Designing a pneumatic toy	WEEK 3 DATE: 16.09 Making pneumatic toys	WEEK 4 DATE:23.09 Decorating and assembling my toy
LO: To understand how pneumatic systems work. **Success Criteria:** I can recall that mechanisms are a system of parts that work together to create motion. I can recall that a pneumatic system can be used as part of a mechanism. I can recall that pneumatic systems are used in a range of everyday objects. I can recall that a pneumatic system can force air over a distance to create movement. **Main Event: I**n small groups, hand out equipment for the children to experiment and the *Activity: Pneumatic systems* (one each). Explain that the children will record three examples of pneumatic systems, as demonstrated by the teacher, and explain how they work. **Support:** Could have the experiments repeated or have the equipment set up in front of them. **Challenge:** Should draw, label and explain in greater depth; should provide examples of products that use pneumatic systems.	**LO:** To design a toy that uses a pneumatic system. **Success Criteria:** I can develop design criteria from a design brief. I can generate suitable ideas using thumbnail sketches and exploded diagrams. I can recall there are three different types of pneumatic systems that I can use to design my toy and use recycled household objects to make it. I can recall that different types of drawings are used in design to explain ideas clearly. **Main Event:** Ask the pupils to sketch three ideas for a pneumatic toy on their design sheet. Explain that the sketch should involve either a backwards and forwards or up and down movement (e.g. a jack-in-the-box, moving scenery in a puppet theatre or Santa coming out the top of a chimney). Display slide 5 and explain that an exploded diagram can illustrate how different parts of a product fit together, giving a clear idea of exactly how to make it. They could add arrows and label the parts with the materials they will use or begin drawing a detailed version of their idea using slide 7 to support it. **Support:** Could use the examples on the *Activity: Example sketches and diagrams*; could use the *Activity: Pneumatic toy design sheet two; s*hould be encouraged to keep their ideas simple so that they can focus on creating a high-quality end product; could remove the time constraint suggestions on thumbnail sketches. **Challenge:** Should be challenged to draw with detail and accuracy, labelling the parts and materials in their design.	**LO:** To create a pneumatic system. **Success Criteria:** I can create a pneumatic system to create a desired motion. I can build secure housing for a pneumatic system. I can recall that syringes and balloons can be used to create different types of pneumatic systems. I can recall how to use these components to make a functional and appealing pneumatic toy. **Main Event:** Children to collect necessary materials for their pneumatic system. Arrange the children on tables according to the type of pneumatic system they are using (e.g. those who are using balloons and those who are using syringes) as they can share materials and support each other. Once the children have created the mechanism, they can find the materials for their housing: cardboard packaging or card. The children must clearly mark where to attach the different parts of their mechanism: they must fit the balloon or syringes before they attach the moving parts of their toy. Once the children have finalised how the parts attach, they can cut out the necessary pieces of card for hinges or moving parts. Explain that they should hold the mechanism in place to test that it still works in the housing. **Support:** Should keep their toy simple, e.g. use balloons instead of syringes for their pneumatic toys, using boxes with hinged lids, and use pre-made shapes. **Challenge:** Should create their own nets on card for the housing.	**LO:** To test and finalise ideas against design criteria. **Success Criteria:** I can remember that materials are selected due to their functional and aesthetic characteristics. I can recall how to manipulate materials to create different effects by cutting, creasing, folding, weaving, etc. **Main Event:** The children finish making the pneumatic system and housing for their toys before assembling and decorating them. **Support:** Could make simple decorative features using suggested materials; could use a model to help them decorate their design; could be given pre-made features (e.g. arms, eyelashes, curled pipe cleaners, etc.) to help decorate their pneumatic toys. **Challenge:** Should experiment with their use of materials, independently reaching their own conclusions about how to make and finish their toys.