

This is an example of a unit of work for D&T. All our units of work for D&T are planned in the same format and knowledge is linked to previous and future lessons. The progression map for D&T has been followed when planning all units. All our D&T lessons start with a retrieval exercise. Medium Term plans are reviewed and adapted as necessary.

Design and Technology Medium Term Plan

Year Group: 3	Unit : Moving Monsters	Term: Spring
Previous Learning Children have used wheels, axels and chassis to make models move. They have created simple design briefs for their D&T work and evaluated products they have made.		Links to Future Learning Children will develop their knowledge of pneumatic systems and investigate ways to make a moving rocket in Y5.
Concepts to be developed in this unit Design, Make, Evaluate, Technology, Innovate		Unit Vocabulary pneumatic systems, pumps, air, pipes, syringes, moving, leaver, hydraulic, inflate, deflate, lever, compressed, plan, design and evaluate.
Knowledge and Skills to be taught in this Unit Explore • Know that mechanisms are a collection of moving parts that work together as a machine to produce movement • Know that there is always an input and output in a mechanism • Know that an input is the energy that is used to start something working • Know that an output is the movement that happens as a result of the input • Know that a lever is something that turns on a pivot • know that a linkage mechanism is made up of a series of levers • Know some real-life objects that contain mechanisms • Use syringes and balloons and investigate leverage systems with pneumatic systems to create movement • Explain how simple pneumatic systems work using the correct vocabulary Design • Use knowledge of pneumatic systems to design a moving monster • Describe what materials and components they will need to create their monster and annotate designs • Use peer feedback to identify areas that could be improved upon in their design Make • Cut and assemble pieces neatly • Work safely and effectively with a range of tools and techniques- scissors, glue, staples, syringes, balloons, tubing, straws, plastic bottles Evaluate		

- Evaluate own designs against design criteria
- Use peer feedback to modify a final design
- Identify successful elements of their moving monster and areas that can be improved upon.
- Describe what they would do differently next time

Lesson Objective	Teaching and Learning including Flashback	Outcome	Vocabulary	Resources
Pre assessment-revise work on axels and wheels (Y2) for movement. To investigate a variety of familiar objects that use air to work .	 1. What materials did you use to make a vehicle in Year 2? 2. What is an axel? 3. How did you attach the wheels? 4. How did your vehicle move? Discuss that mechanisms are a collection of moving parts that work together as a machine to produce movement Explain that there is always an input and output in a mechanism The input is the energy that is used to start something working The output is the movement that happens as a result of the input How many objects can you think of that use air to make them work? Give children a few minutes to discuss their ideas with a partner, then list the ideas on the slides. How do each of these objects use air? Invite children to describe how they think they work. Look at the picture of the slides of objects that use air to work, e.g. recorder, bicycle pump, party blowers. Ask children to describe what the air does and how it has been used in the design of these products	Children know about objects that use air and	pumps, air, pipes, syringes, moving,	PPT, activity sheet
To investigate techniques for making simple pneumatic systems using syringes and balloons and investigate leverage systems with pneumatic systems to create movement.	 1. Name 3 objects that use air to work 2. Draw and label one of the objects. 3. How does your object use air? Show children the picture on the slides of the syringe and tubing attached to a balloon. What do you think will happen to the balloon when the syringe is pushed in? Why? Ask chn - Do you know what the word 'pneumatic' means? Explain how a pneumatic system works and give them some examples of items that use pneumatics, e.g. bicycle pumps, pneumatic drills, air guns, pipe organs, etc. Can you explain how each of these works? Children to think, pair, share their ideas.	Chn know the term pneumatic system all chn have used a syringe, balloon and tubing to make a pneumatic system	pneumatic systems, pumps, air, pipes, syringes, moving, inflate, deflate, lever, compressed,	Syringes, tubing, balloons

	Tell children that today they will be investigating pneumatic systems in preparation for creating a moving monster with pneumatics. Give chn 5 minutes to have a go at making a system. Then ... use the pictures on the slides and model how to attach the syringe and balloon to the tubing. Can you think of any other ways of making a pneumatic system?			
To plan a moving monster using a design criteria and plan using annotated sketches.	 1. What is a pneumatic system? 2. Name an object that uses a pneumatic system to work. 3. What materials did you use to make a hat in Year 1? 4. How did you make a birdhouse in Year 1? Children remember how they made a pneumatic system last week Tell children we are gathering ideas today before we design our own moving monster and we are thinking about which parts of the monster we can make move – collect ideas – mouth opening, eyes/legs/arms moving Children plan their monster, including sketches of the monster they will make	All children have planned a monster to make	pneumatic systems, pumps, air, syringes, moving, inflate, deflate, compressed, plan, design	Planning sheets
To test out ideas using prototypes.	 1. Name 3 objects that use air to work. 2. Draw a labelled diagram of a pneumatic system. 3. What materials did you use to make a puppet in Year 2? 4. How did you join the materials together? Children use a balloon, balloon pump and tubing to make a prototype of the pneumatic system that will go inside their moving monsters. Introduce word prototype - the first one you make as a model for the rest Adapt and improve it as necessary.	Children have a working and effective pneumatic system to put inside their moving monster	pneumatic systems, pumps, air, syringes, moving, inflate, deflate, compressed,	Balloons, balloon pumps, tubing
To make a monster with a moving pneumatic part selecting from a range of tools and equipment.	 1. What do we call a system that uses air to move? 2. What is a prototype? 3. What is the input for your prototype? 4. What is the output for your prototype? Ask children to get their designs from lesson 4 out and give them a few minutes to look over them to remind themselves of what they will need to do to create their moving monsters. •Go through the questions on the slides: How can you make sure that your	Children have all made a monster with a moving part	pneumatic systems, pumps, air, pipes, syringes, moving, leaver, hydraulic,	Burger box, tubing, balloons, felt tips, glue, tape

	finished product will look like your design? How will you make sure that your pneumatic system will work effectively? What will you do if you come across any problems while you are making your moving monster? Children to think, pair, share their ideas.		inflate, deflate, compressed,	
To evaluate my moving monster against my design criteria and suggest improvements. Talk about any changes made during the making process	 1. What is a system called that uses air to work? 2. How does a recorder use air? 3. How does your moving monster use air? 4. What materials and tools did you use to make your moving monster? Ask children to get their finished moving monsters out and invite children to come to the front to share their finished products with the class. Use the questions on the slides as a focus for discussion: What do you like about this monster? How well does the moving part work? What do you think of the appearance of the monster? Is there anything you think could be improved? •Why is evaluation such an important part of the designing and making process? Children to think, pair, share their ideas.	Children have evaluated their models and reflected on the process of making their monsters	pneumatic systems, pumps, air, pipes, syringes, moving, hydraulic, inflate, deflate, lever, compressed, evaluate.	Evaluation sheets