

Year 2

Design and Technology

Mechanisms: Making a moving monster (Summer 1)

Ladders to be covered:

Y2-MS-D1-I can create a class design criteria for a moving monster.

Y2MS-D2- I can design a moving monster for a specific audience in accordance with a design criteria.

Y2-MS-M1- I can make linkages using card for levers and split pins for pivots.

Y2-MS-M2- I can experiment with linkages adjusting the widths, lengths and thickness of card used.

Y2-MS-M3- I can cut and assemble components neatly.

Y2-MS-E1- I can evaluate my own designs against design criteria.

Y2-MS-E2- I can use peer feedback to modify a final design.

Resources needed:

Powerpoints, card, split pins, worksheets for each lesson, examples of mechanisms, glue, pencil, pencil crayons, rulers.

Session	
1 BQ – What is a mechanism?	<p><u>LI: I can create a class design criteria for a moving monster.</u></p> <p>Pre-assessment</p> <p>Introduce Knowledge Organiser</p> <p><u>Resources needed:</u> PowerPoints (Kapow), Levers and Linkages worksheet, design criteria template worksheet(1 for teacher to write on then copy), mechanism examples (toy car- wheels and axel, can opener-gears, hole punch-lever, interactive greeting card-sliders and toy cranes- pulley systems. Non- mechanical examples (teddy bear, doll, pencil, ruler and chair.</p> <p>Key terminology – axle, input, mechanical, pivot, design criteria, linkage, output, wheel.</p> <p>Recap that a mechanism is the part of an object that move together and many different everyday objects use mechanism from cars to pop-up books.</p> <p>Show children a range of different objects including a mixture of mechanisms and non-mechanical products. Ask the children if they can name any of the components (for example buttons, handles, slider, wheels, etc. Then ask which are mechanical and which are not. Now ask the children the following, explaining they are unsure.</p> <ul style="list-style-type: none">• What is a mechanism? (A collection of parts that work together to create a movement, for example, a bicycle.)

	<ul style="list-style-type: none"> • What is an input and an output? (An input is something that starts a system, for example: pushing a bicycle; an output is the result of the input, for example, bicycle wheels turning.) • What is a lever? (Something that turns on a pivot, for example, a door handle.) • What is a linkage? (A system of levers, for example, a skeleton.) • What are levers and linkages used for? • Can you identify a lever or a linkage? • Can you name any products that use levers and linkages? (Scissors; seesaw; wheelbarrow) • What is a pivot? (A central point from where something can turn, like your elbow.) <p>Explain you will be designing and making a moving monster, show pictures of example ones to show the children.</p> <p>They are not going to investigate levers and linkages and toys in more detail. They need to stick in the worksheet and circle where the pivots are.</p> <p>Finally, as a class, look at some toys (mechanical, wind-up or puzzle) and ask the children what they like about the toys and what they think could be improved. Decide a 2 point design criteria for what the moving monster should do (for example colourful, interactive or fun) Write these on the worksheet and stick in.</p>
<p>2 BQ – How can I make a mechanism?</p>	<p><u>LI: I can make linkages using card for levers and split pins for pivots.</u> <u>LI: I can experiment with linkages adjusting the widths, lengths and thickness of card used.</u></p> <p>Resources needed: PowerPoints (Kapow), linkage diagram worksheet, plasticine/rubber, pre-cut card strips (thin or thick), Thin or thick card to experiment making linkages, paper fasteners/split pins, scissors and glue.</p> <p>Key terminology – input, mechanical, pivot, linkage and output.</p> <p>Explain to the children that we will be experimenting with making different linkage systems. Model to the children how to make a linkage (see video on KAPOW: Making Linkages). They need to cut the card strips, creating holes safely and creating pivots with paper fasteners.</p> <p>Tell the children they can experiment with varying their materials by changing the lengths and widths.</p> <p>Hand out the linkage diagram and explain that they will explore making linkage systems 1 and 2, which they will use to make their monster. They will do this as independently as possible.</p> <p>More able children may have a go at completing linkage system 3. Make sure the linkages produce the desired motion you wanted.</p>

	<p>Stick these practice linkages into DT books.</p>
<p>3 BQ – What will my design look like?</p>	<p><u>LI: I can design a moving monster for a specific audience in accordance with a design criteria.</u> <u>LI: I can use peer feedback to modify a final design.</u></p> <p>Resources needed: PowerPoints (Kapow), design criteria from lesson 1, moving monster design brief worksheet (make sure to add design criteria from lesson 1 to worksheet), moving monster examples, model of moving monster toy and colouring pencils.</p> <p>Key terminology – design criteria, input, linkage, mechanical, output, pivot, survey.</p> <p>Discuss these points:</p> <ul style="list-style-type: none"> • What do monsters look like? • What famous monsters do the children know about? • What features do monsters have? <p>Show the children a working example of a moving monster and display the slides of moving monster examples. Remind children we are only designing the face, which will be made of two parts.</p> <p>These could include:</p> <ul style="list-style-type: none"> • Big teeth or fangs • Scary shape or coloured eyes • Fur or scales <p>Recap the design criteria agreed upon in Lesson 1 and explain they need to follow this criteria.</p> <p>Children will then design their monster. Making sure that they consider the design criteria. They can also add an extra design criteria that can be different to others. This can be the monster will be scaly, strong, scary, etc.</p> <p>Remind children when drawing that they need to make two different designs and colour them. They need to add arrows to their designs to indicate the parts that move and which way. And they should draw a diagram of the linkage system they have chosen. Children then need to decide if their design has achieved the criteria by ticking or crossing each point.</p> <p>Children will then show children on their tables their two designs and vote for which one they think has hit the design brief the best.</p>

	<p>Children then need to complete the final design box to explain which design they will be making.</p>
<p>4 BQ – Can we make a moving monster using my design?</p>	<p><u>LI: I can cut and assemble components neatly.</u></p> <p>Resources needed: PowerPoints (Kapow), thick card strips marked with holes if desired, thin card for children who want to draw their own monster head and jaw, rulers, plasticine/rubbers, glues sticks, scissors, tape and colouring pencils</p> <p>Key terminology – design criteria, evaluation, linkage, mechanical and pivot.</p> <p>Tell me something you have learnt about linkages and linkage systems so far.</p> <p>Remind children of the linkage systems made in lesson 2, hold up examples. Talk about what worked best, which was the strongest, did the thickness of the card make a difference?</p> <p>Model how to use the head and jaw template as a base to model their monster around. (Could show video making my monster). Explain that the children could draw above and below the template to add teeth, spikes, scales or fins. Make sure it matches your design.</p> <p>Make your monster reminding children about how to do things safely. Children can use the head and jaw activity sheet if they want to use this to help.</p> <p>When the model is made and moves the way they wished they can decorate their monsters.</p> <p>Take photos to stick in the book.</p>
<p>5 BQ – Did I meet the design criteria set?</p>	<p><u>LI: I can use peer feedback to modify a final design.</u></p> <p>Children should complete the evaluation template worksheet and stick into book</p>