

**Design and Technology > Year 1 > Mechanisms: Making a Moving  
Story Book > Exploring Levers and Sliders**

Learning Objectives	Before the Lesson
<p>To explore making mechanisms</p> <p><b>Success criteria:</b></p> <ul style="list-style-type: none"> <li>• I understand that levers and sliders are mechanisms</li> <li>• I know that levers and sliders can make things move</li> <li>• I can create moving models that use levers and sliders</li> <li>• I can use the words: up, down, left, right, vertical and horizontal to describe movement</li> </ul> <p><b>National curriculum links:</b></p> <ul style="list-style-type: none"> <li>• Explore and evaluate a range of existing products</li> <li>• Explore and use mechanisms [for example, levers, sliders, wheels and axles]</li> </ul>	<p><b>Watch</b></p> <ul style="list-style-type: none"> <li>• Watch teacher video <i>Exploring Levers and Sliders</i></li> </ul> <p><b>Have ready</b></p> <ul style="list-style-type: none"> <li>• <i>Exploring Levers and Sliders PowerPoint</i></li> <li>• A teddy bear or toy</li> <li>• Lollipop sticks or strips of stiff card, 2 cm width (two sticks per child)</li> <li>• A4 card with four holes punched into it (two pieces per child)</li> <li>• Strips of card 2cm x 10 cm, for bridges.</li> <li>• One set of the Demonstration Resources assembled prior to the lesson</li> </ul> <p><b>Print</b></p> <ul style="list-style-type: none"> <li>• Car and Rabbit Resource (the resource has three sets of images per page and you need one car and rabbit per child).</li> <li>• <i>Exploring Levers and Sliders PowerPoint</i> (for those children who are to complete the exercise independently rather than as a class)</li> </ul>
Attention Grabber (10 minutes)	Key Questions
<p>Put a teddy bear on a table. Ask the children how they could make the bear move up or down, side-to-side or round and round?</p> <p>Ask the children to stand up and demonstrate.</p> <p>Ask the children if we can make a picture move in the same way. How?</p> <p>Assemble the <i>Demonstration Resources</i> to show the children:</p> <ul style="list-style-type: none"> <li>- The first two pages are a street lined with houses and a magician's hat.</li> <li>- The third page is a rabbit and a car – both of which need to be cut out and attached to a lollipop stick or a strip of stiff card.</li> </ul> <p>Cut along the street to allow you to slip the car (attached to the lollipop stick) through the paper and move it accordingly – 'sliding' it along past the houses.</p> <p>Now cut a slit along the top of the hat so that the rabbit can move in and out of it (as if by magic!).</p>	<p>What do you think will move?</p> <p>How will you make it move?</p> <p>Which part of the mechanism will move?</p> <p>In what way will it move?</p>

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Ask pupils how the car moves – how do they think the movements happen? What might be behind the background that makes things move? (A slider mechanism). How does the rabbit move? (A lever mechanism).

### The Main Event (30 minutes)

#### Explore (20 minutes)

Tell children that they will be cutting out and making each of the mechanisms just demonstrated (a slider and a lever) so that they can start to explore how they work. To do this, each child will need a copy of the *Car and Rabbit Resources*.

#### Moving car

1. Give the children a cut-out of the *Car Resource* (or allow time for the children to cut out themselves) and then ask the children to stick the car to a lollipop stick (or strip of stiff card). This will be their 'slider'.
2. Then give the children the card with four holes punched into it, to enable them to cut two lines between the holes – this will be their 'slot'.

To make the holes, fold the card in half lengthways and make a single hole in each corner (on the folded edge) – this will in effect make four holes because the card is folded.

Once everyone has had time to explore with his or her models, return to the demonstration model.

Move the car along the road and explain that the mechanism making this move in this way is a 'slider'. Ask the children to use their sliders to move their car either along the card or up and down. Explain that the slider is moving through the slot.

#### Rabbit in a hat

1. Give children a cut-out of the *Rabbit Resource* (or allow time for the children to cut out themselves) and then ask the children to stick the rabbit to a lollipop stick (or strip of stiff card). This will be their 'lever'.
2. Then give the children the second piece of card with four holes punched into it, prepared as before. Again, ask the children to cut two lines between the holes to form the slot.

\*Unlike the car, which moved from left to right (side to side) the rabbit needs to move up and down – this mechanism is called a 'lever'. Although a lever also moves through a slot, it sometimes has a 'bridge' or 'guide' to stop it from moving from side-to-side.

3. To make the guide, use a piece of cardboard and stick it, like a bridge, over your lollipop stick (above your cut out line). This cardboard bridge will restrict the lollipop stick from moving left or right – enabling it to move only straight up and down.

### Differentiation

**Pupils needing extra support:** Will need further direction to insert the car into the cut grooves. They may need to refer back to the demonstration model.

**Pupils working at greater depth:** should begin to look at how they can better control their movements. Can they use card strips to restrict or guide the movement – making cardboard bridges over the lollipop to restrict it from moving left and right, enabling it to move straight up and down rather than making an arc.

While the rest of the class does the 'Wrapping Up' section of the lesson together, print out the slides of the *Exploring Levers and Sliders PowerPoint* and let pupils complete the exercise independently.

### Wrapping Up (10 minutes)

Go through the *Exploring Levers and Sliders PowerPoint* which shows several pictures and descriptions of movements.

Ask the children to consider the direction of movement in each of the examples and then state what mechanisms would be needed to make this movement required – either a slider or a lever.

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Assessing Pupils' Understanding and Progress	Next Steps
<ul style="list-style-type: none"> <li>• Did the children know what a lever or slot was before the lesson?</li> <li>• After the lesson, could the children describe how something moves using the language: up, down, left, right, vertical, horizontal?</li> </ul> <p><b>Pupils with secure understanding indicated by:</b> Identifying whether a mechanism is a lever or slider and determining what movement the mechanism will make.</p> <p><b>Pupils working at greater depth indicated by:</b> Identifying if a mechanism is a lever or slider and being able to determine what movement the mechanism will make. An ability to explain how they might adapt the mechanism, using bridges or guides to control the movement.</p>	<p>Design and Technology &gt; Year 1 &gt; Mechanisms: Making a Moving Story Book &gt; Design</p>