

MOVING TOYS – AN INTRODUCTION TO WORKING SCIENTIFICALLY

KEY STAGE 1 TEACHING SESSION

Years 1 and 2 – 1 hour



Jack-in-the-box, Mettoy Ltd, 1945-1950 © Victoria and Albert Museum, London

In line with the new National Curriculum this session will provide practical activities for working scientifically. The children will have hands on experience with a selection of moving toys, designed to promote a sense of excitement and curiosity. They will be encouraged to understand how science can be used to explain how the toys move and will use simple scientific language to explain what they have found out. This session will also provide a useful introduction to forces at Key Stage 2

LESSON PLAN

Key Concept – What is a force?

For the purposes of KS1 the force is either a **push** or a **pull**. A force is needed to stop or start an object moving and to change the speed or direction of movement. A **twist** is a push and pull combined and to **blow** is to push using air.

Resources

Push toys: Jack-in-a-box, Wakouwa toys, pop-ups and push-along wheeled toys

Pull toys: jumping jacks, pull back toys and pull-along wheeled toys

Blow toys: windmills, blow football game

Twist toys: simple spinning toys

Wind-up toys: simple clockwork toys

Teaching activities

Introduction (5 mins)

Introduce 'push' and 'pull'.

Activity 1 (5 mins)

Children compare and contrast a pull-along toy and a push toy on a stick.

Activity 2 (15 mins)

Children watch a different pull toy, then explore boxes of toys in groups. Discussion and explanation of 'twist' and 'blow'. Demonstration of spinning toys, and windmill.

Activity 3 (15 mins)

In groups, children investigate an activity bag with a mixture of wind-up and other toys.

Activity 4 (10 mins)

Children play a traditional blow football game in groups.

Plenary (5 mins)

Conclude with a moving toy that the children can find in the museum.

Background information

Jumping Jacks: **pulling** a string is one of the oldest methods of animating a toy.

Wakouwa toys: the spring in the base pulls string taut when at full length, which keeps the body of the toy upright. When the base is **pushed** the spring is compressed and shortens, the string lengthens and slackens, so toy falls. Wakouwa comes from the name of the inventor.

Wheeled toys: move only when **pushed** or **pulled** along a surface.

Jack-in-a-box: these work because of the spring inside. When the box is closed (**pushed**) the spring is compressed, and stores potential energy until the restraining force is released – when the lid is opened.

Spinning toys: spinners work because they are **twisted** and released.

Wind up toys: clockwork toys work on a similar principle to that of a spring. When the key is **twisted** and turned a metal coil is wound up, storing energy and then released. A balance wheel controls the speed of release, keeping the energy release consistent. Cogwheels (wheels with teeth) convert energy into movement.

Blowing toys: these toys move because they are light enough for the air blown on them to push them. In blow football children use straws to direct the air onto a small, light ball to push it around a pitch, aiming to score goals and defend.