

Play Resource Presents Science from Scrap

Moving heavy loads

You will need:

Container such as a cardboard box or plastic tray

Choice of books, weights, bags of sand etc to act as weights.

Force meters (or use string, a yoghurt pot and weights)

About 6 equally sized cardboard tubes



How to use these resources for enquiry in Science/Maths

This activity can be used in lessons focusing on forces and energy. Initially the model can be used to illustrate a particular scientific phenomenon but then become an exploration (or fair test) where the children change things to investigate the difference they make, e.g. width of tubes, weight in the box etc. as well as comparing floor surfaces. The readings generated can be used in numeracy lessons when looking at data handling

Instructions

- Place your heavy weight in the box and set it on the floor.
- Attach the force meter to the front of the box, pull and measure how much force is needed to start the container moving. Record this.
- (If a force meter is not available, attach one end of the string to the front of the box and tie the other end around a plastic pot. Hang this over the edge of a table and add weights until the box starts to move.)
- Repeat on different surfaces such as wood, carpet, concrete etc.

Repeat again but this time have the container sitting on the cardboard tubes, which will now act as rollers.

Possible links to WAU topics

Forces, Egyptians, Transport, Keeping Safe

Background Knowledge

Friction is the force between two surfaces which opposes motion. Rough surfaces such as carpet or concrete will generate more friction than smooth or shiny ones. Using rollers reduces the amount of force needed to start an object moving over a surface and are believed to have been used by the Egyptians, among others, to move heavy slabs of stones.

Key Questions

- Which surface is the easiest/hardest to pull the box on?
- Why do you think this is?
- What do you notice when you do the same thing again, but this time on the rollers?
- Can you think of any examples or times when rollers are/were used to move heavy loads?