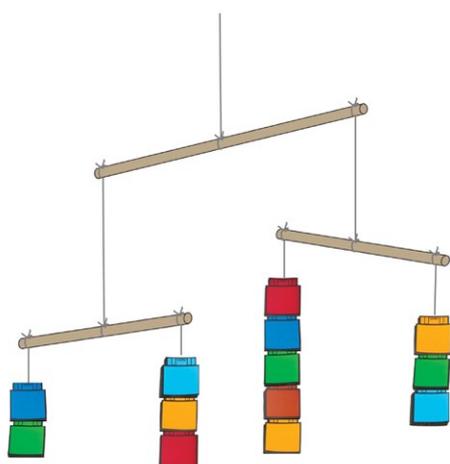


# FREE RESOURCES

The Why and How Challenge

The 'Why and How' Challenge is intended to be something for the staffroom table that lots of teachers will try. It is specifically designed to encourage the children to work scientifically to design and make something or to solve a problem.

This issue's Why and How Challenge is to make a mobile. There are lots of different ways to make decorative mobiles, e.g. hanging things from a wooden hoop or using coathangers, but making one using separate wooden sticks and thread provides a great opportunity for children to explore concepts relating to balance and centre of mass.

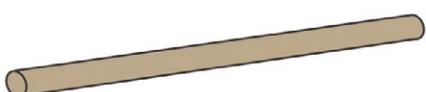


## Making a mobile – can you make it balance?

The challenge for the children is to adjust the position of the strings so that with different numbers of objects hanging off each end of the sticks, the wooden sticks still remain horizontal.

This activity also supports learning about levers – for more about levers please see the misconceptions section of the spring 2019 issue of Why and How?

## RESOURCES



Thin wooden sticks (dowel or similar)



Thread or thin string



Sticky moulding material to stop the threads from slipping on the wood

Selection of objects to hang from the mobile, e.g.



Unifix cubes



Paper clips



Wrapped sweets



### WHAT TO DO

1. Start by making a simple mobile just using one stick.
2. Get the children to attach a thread to the middle and at each end of the string. The middle thread will be from them to hold the mobile.
3. Ask the children to take 2 identical objects that they can hang on each end of their mobile, e.g. paper clips or unifix cubes.
4. When they have attached the objects to the string, ask them to make sure it balances when they hold it up.
5. When they have mastered this, challenge them to add a second object to one of the strings and adjust the central string so that their mobile is still balanced.
6. Once they have got the hang of things, challenge them to add more objects and also more wooden sticks.

7. Can they use three sticks with different numbers of identical objects hanging on each string?

8. What about five sticks?

Hint: If the children find the thread slips on the wooden sticks, they could use small amounts (as small as possible, as it will change the mass of the stick) of moulding putty to anchor the thread in place.

### INCREASE THE CHALLENGE

- How big a mobile can the children make?
- If they are using paperclip chains, each one paper clip longer than the previous, what is the longest chain they can add to their mobile?
- Which class in the school can make the biggest mobile?

## Why not use one of our Why and How? Challenges as a whole school science day or competition?

If you haven't already, you might like to try our other Why and How? Whole school science challenges. Most can be run as a whole school science day or competition.

### WHAT ABOUT .....

- How can we make the slowest paper spinner?
- Whose rubber band car can go the furthest?
- Who can find the greatest number of living things?
- How can we make the longest mechanical chain reaction?
- How many different ideas can we have for doing science with everyday objects?
- Whose O ring glider will travel the furthest?

See [Why and How](#) Challenges for further details.