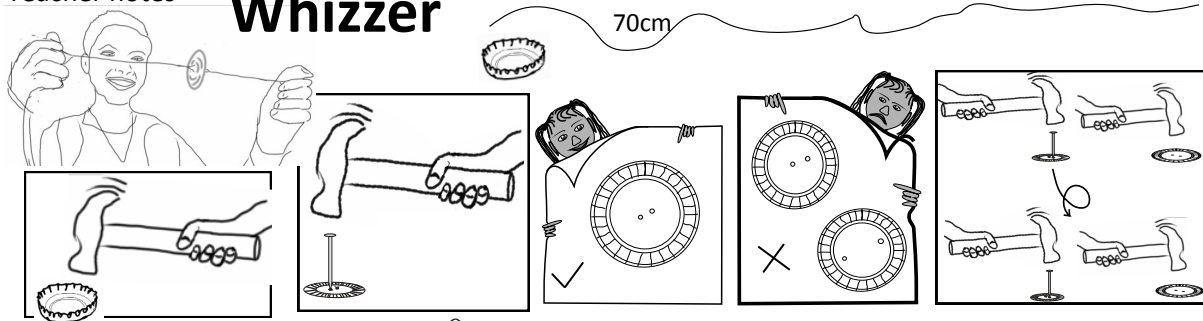
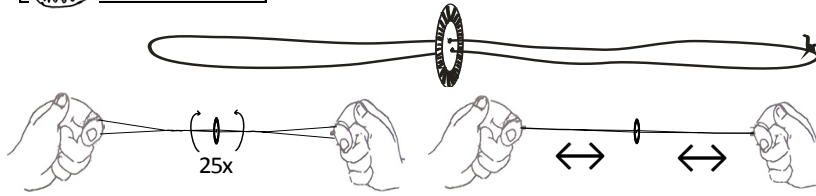


Whizzer

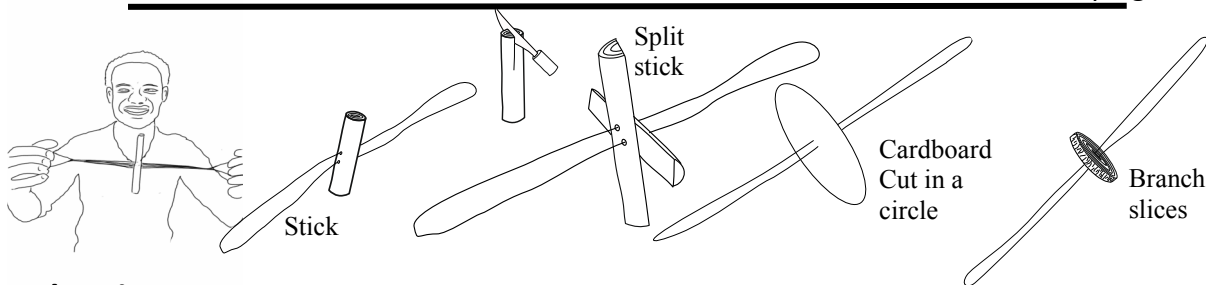


70cm



What it Does

- 1) Spin the top x 25.
- 2) Pull your hands apart making it untwist and spin.
- 3) As the twists run out loosen the pulling so the spinning lid twists the thread up again.



When it Doesn't

The toy works well when it is spinning fast, it requires patience so keep trying.

- 1) It is best to do a lot of winding to start.
- 2) There must be an even number of twists on both sides.
- 3) Discs must be very well balanced, holes the same distance from the centre and close together.
- 4) Thread must not be too stiff to allow twisting.
- 5) Thread will break if the holes are sharp.
- 6) Keep pulling until the twists run out then loosen.

Developing.

When the disc is moving fast try changing its position, you should feel it resist moving.

Use cardboard, buttons, large lids, plywood and even small sticks or branch slices. Make sure it is well balanced.

Split sticks need binding or pegging together.

Decorate the faces of large discs, long spirals work best.

Make notches on the edge of the disc, sound will be made when brushed up against other materials.

Science: Why it works

Twisting the string shortens its length, by pulling out the string must unwind to get longer. This turns the disc.

The disc keeps spinning, even when the twists are run out, due to **Rotational Momentum**, until the retwisting of the string works as a **brake** and makes it stop. Harder pulling makes the disc go faster.

Centrifugal forces make the energy in the heavier spinning discs not want to move to the new position. Heavier discs spinning fast lose the gravitational feeling of weight as the other forces are stronger.

Any small irregularity in the balance will grow at high speed.

Note

The awl in the tool section will make the holes, especially needed for drilling holes in wood so the wood doesn't split.

