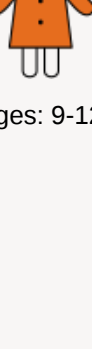


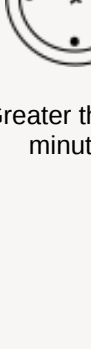
★★★★★

Lolly Stick Fan

Stem Activities



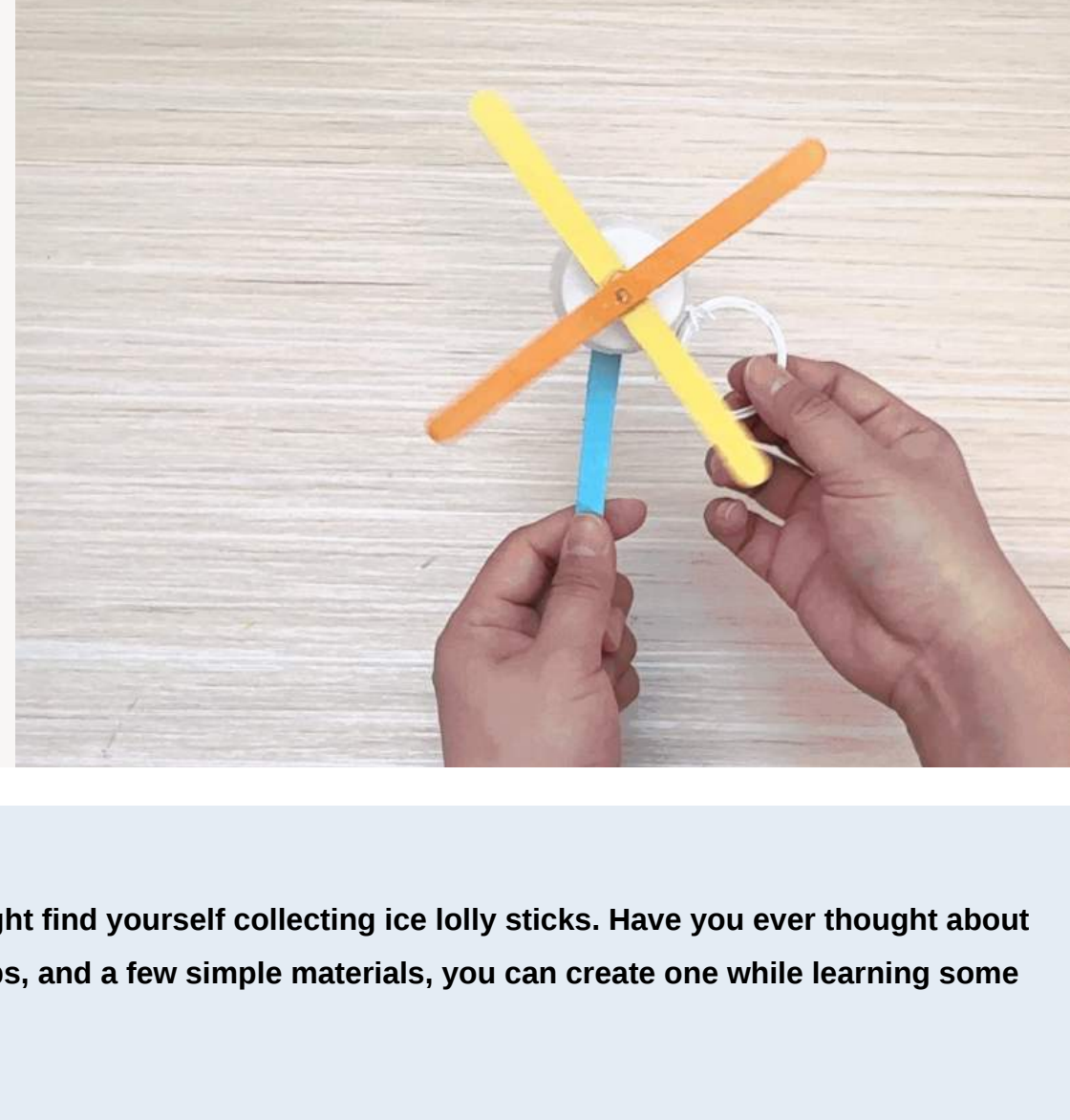
Ages: 9-12



Greater than 30 minutes



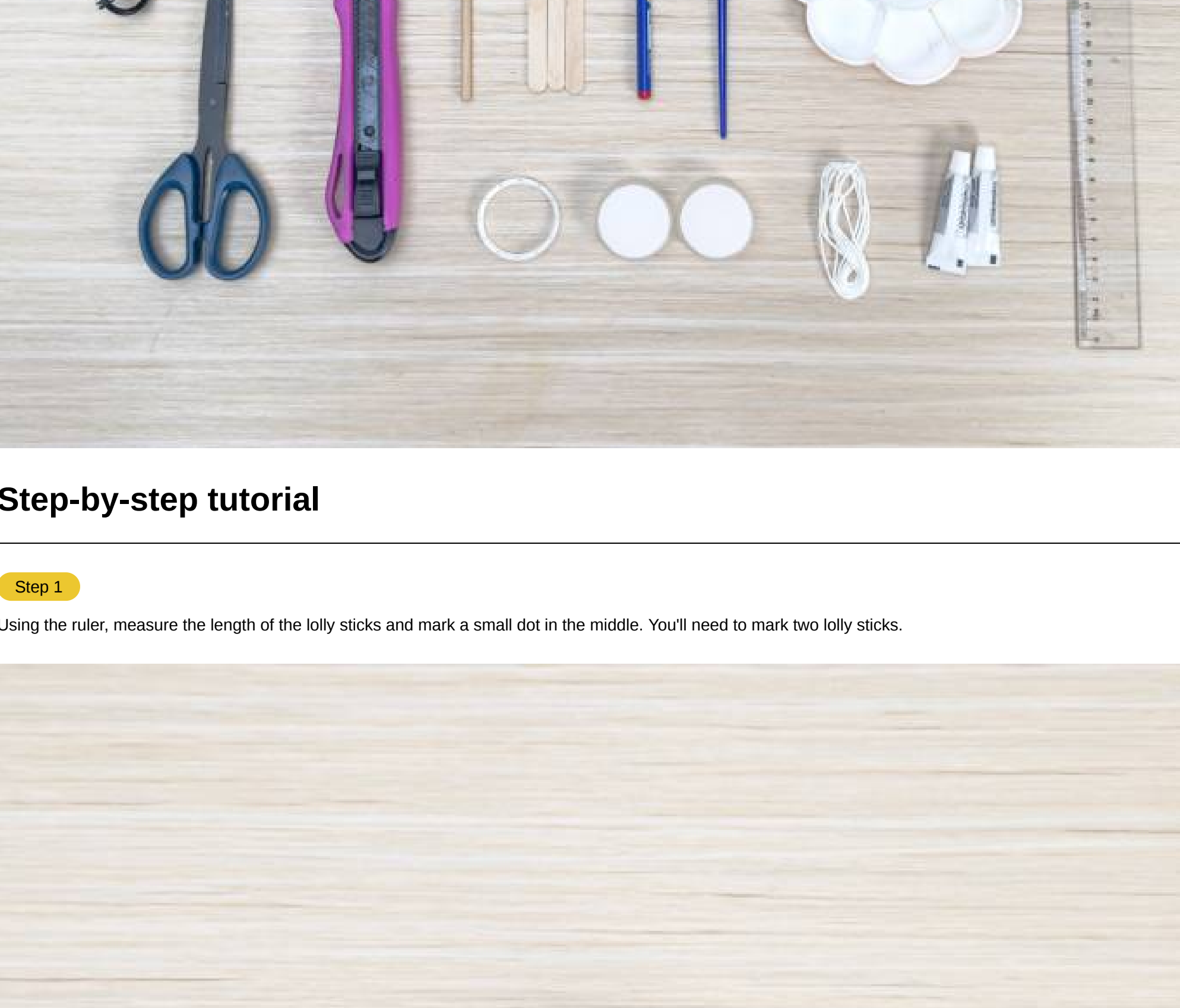
Grownup needed



Summer's here and as the weather warms up, you might find yourself collecting ice lolly sticks. Have you ever thought about making your own fan? With just lolly sticks, bottle caps, and a few simple materials, you can create one while learning some interesting physics!

Materials Needed

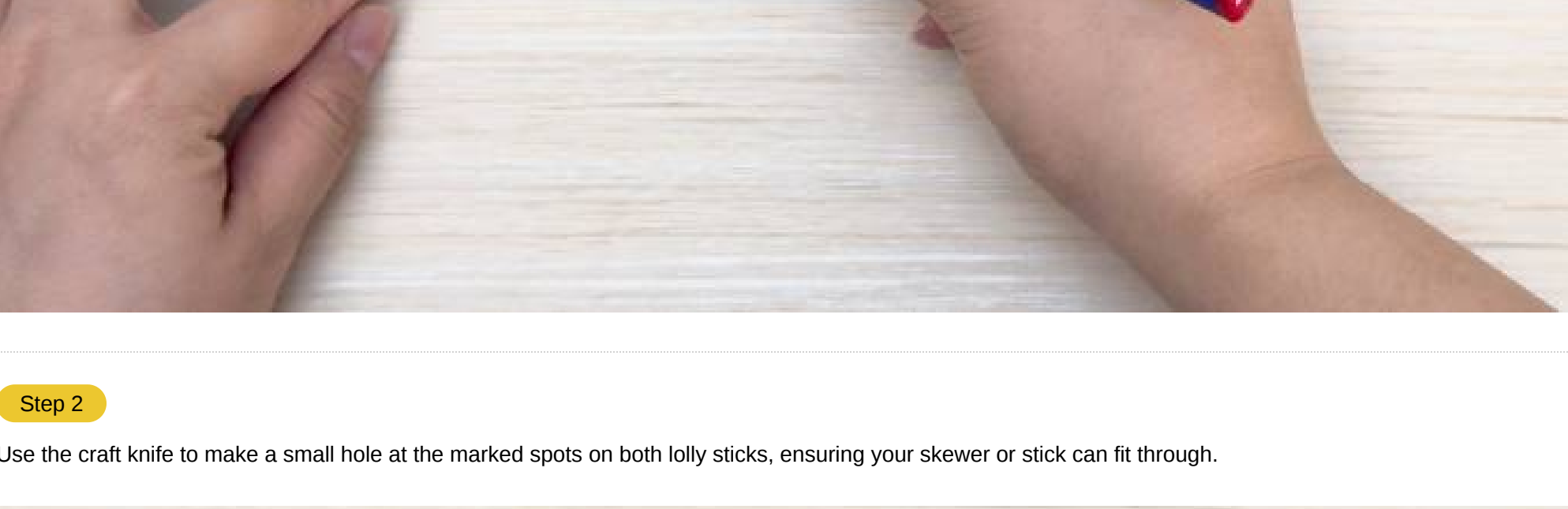
Hot glue
Plasticine
Scissors
Craft knife
Bamboo skewer (or wooden stick)
Three lolly sticks
Two bottle caps
Bottle cap ring
String
Paint
Pencil
Paintbrush
Palette
Ruler



Step-by-step tutorial

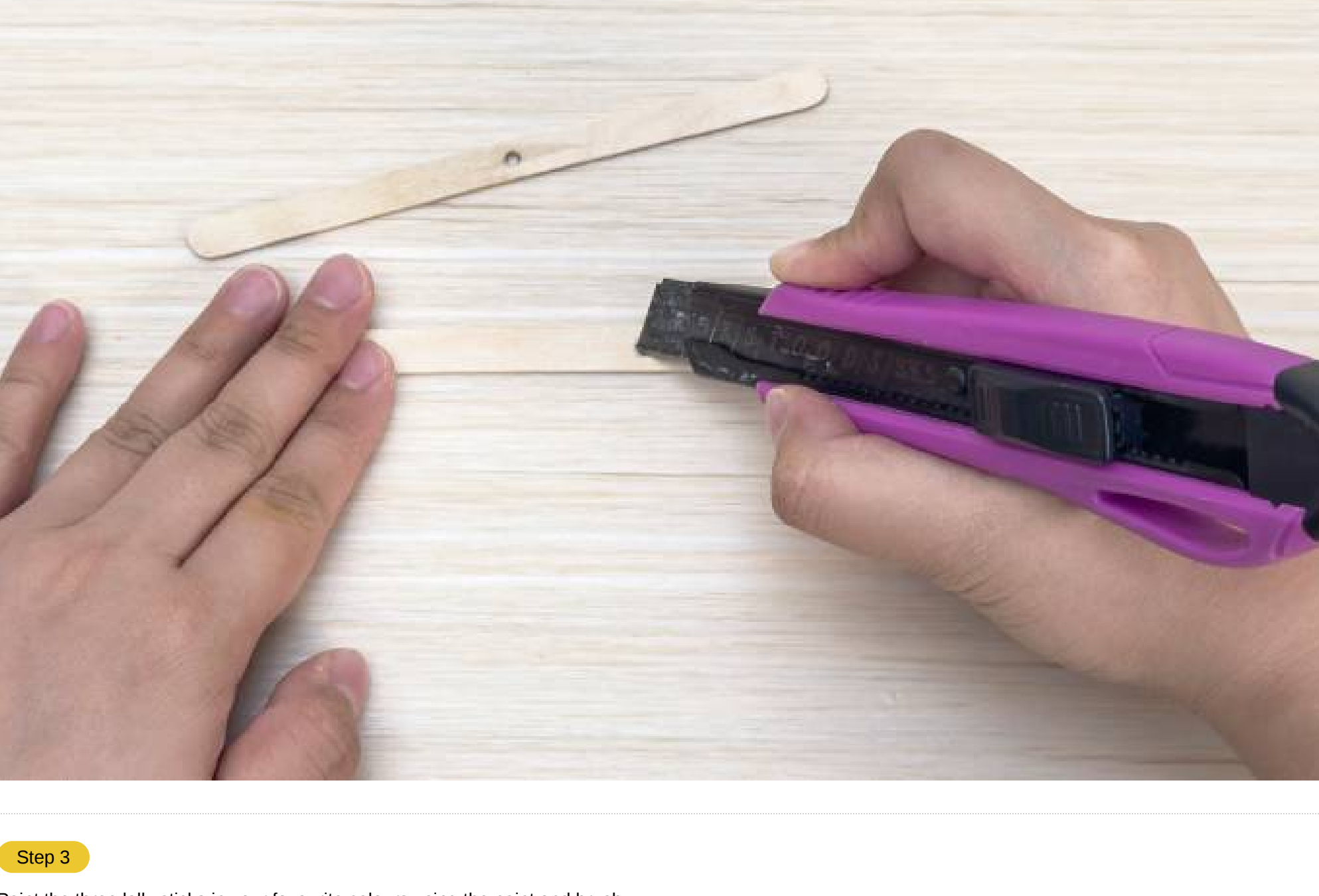
Step 1

Using the ruler, measure the length of the lolly sticks and mark a small dot in the middle. You'll need to mark two lolly sticks.



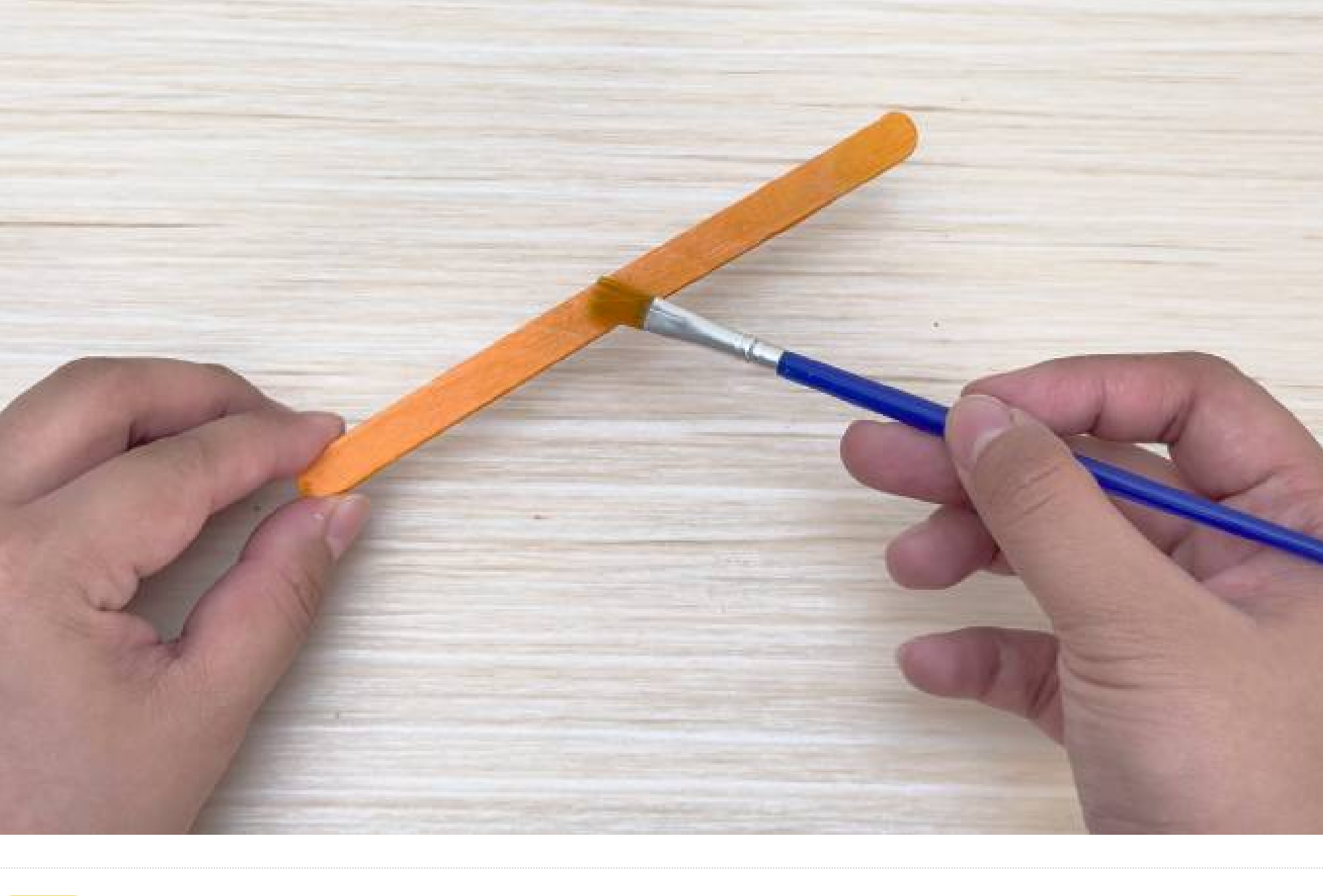
Step 2

Use the craft knife to make a small hole at the marked spots on both lolly sticks, ensuring your skewer or stick can fit through.



Step 3

Paint the three lolly sticks in your favourite colours using the paint and brush.



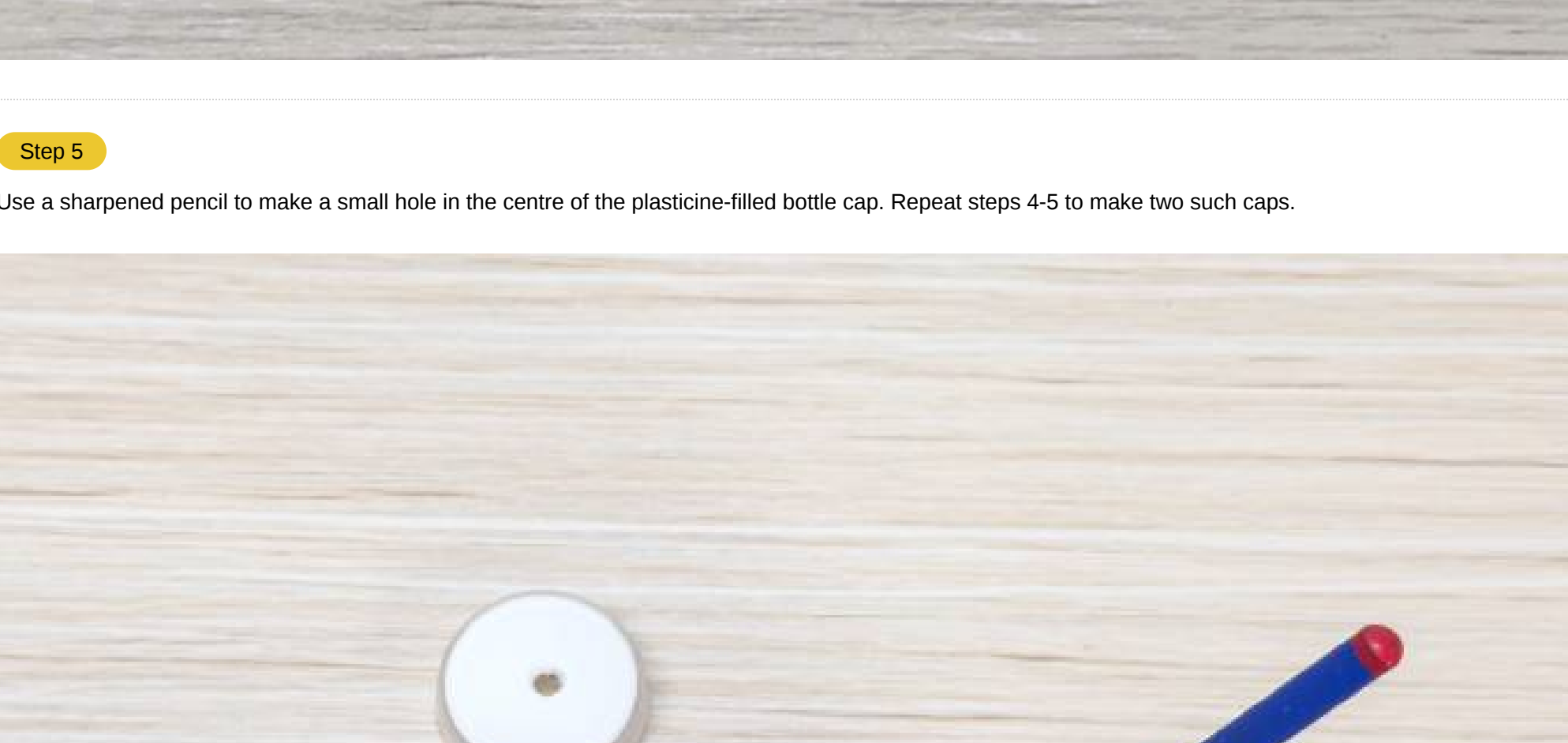
Step 4

Fill one bottle cap with plasticine.



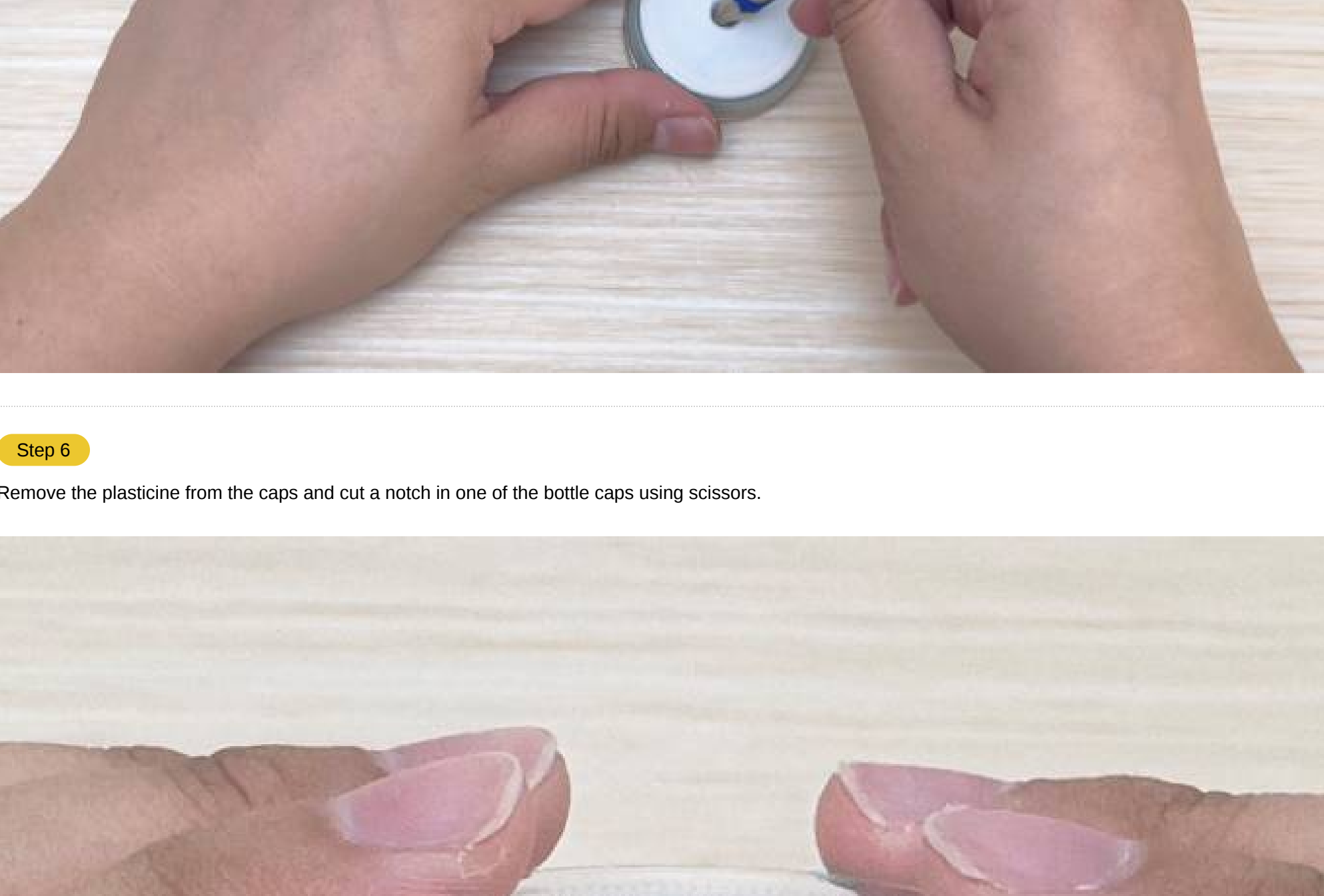
Step 5

Use a sharpened pencil to make a small hole in the centre of the plasticine-filled bottle cap. Repeat steps 4-5 to make two such caps.



Step 6

Remove the plasticine from the caps and cut a notch in one of the bottle caps using scissors.



Step 7

Thread the string through the holes in the lolly sticks and apply hot glue at the intersection, then secure the other holed stick on top in a cross shape.



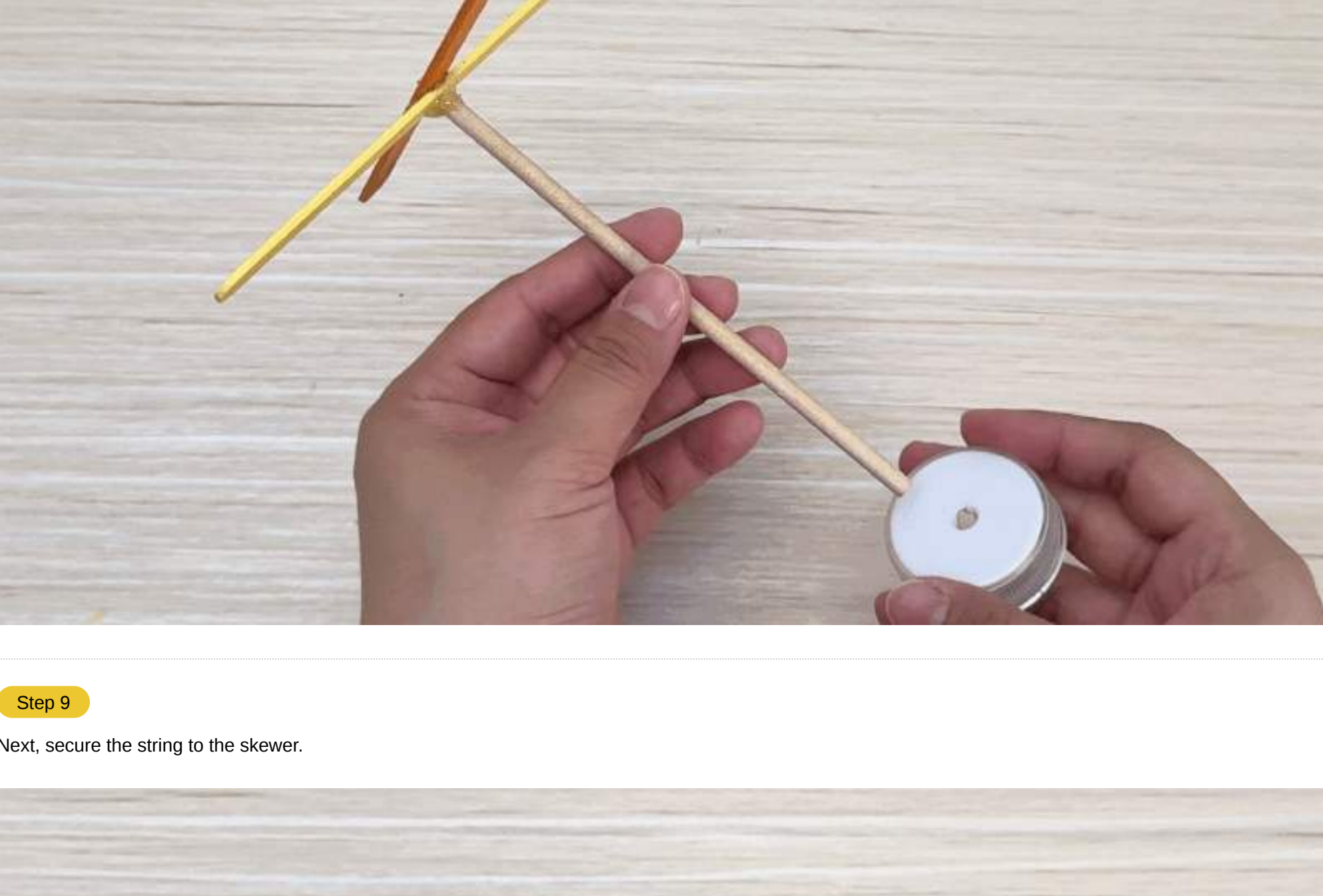
Step 8

Thread the bottle cap without the notch onto the skewer.



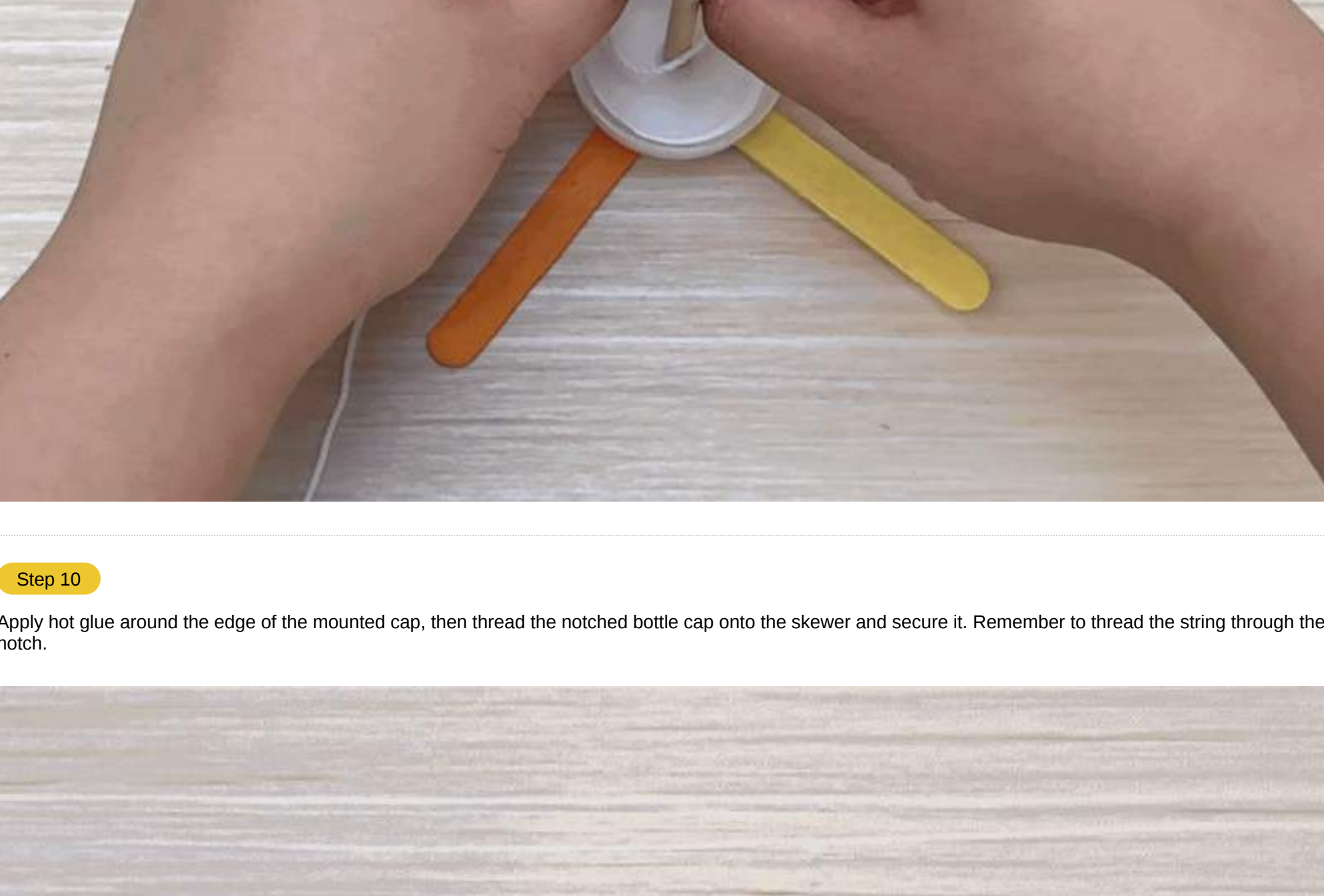
Step 9

Next, secure the string to the skewer.



Step 10

Apply hot glue around the edge of the mounted cap, then thread the notched bottle cap onto the skewer and secure it. Remember to thread the string through the notch.



Step 11

Use hot glue to attach the remaining lolly stick to the bottle cap as shown.



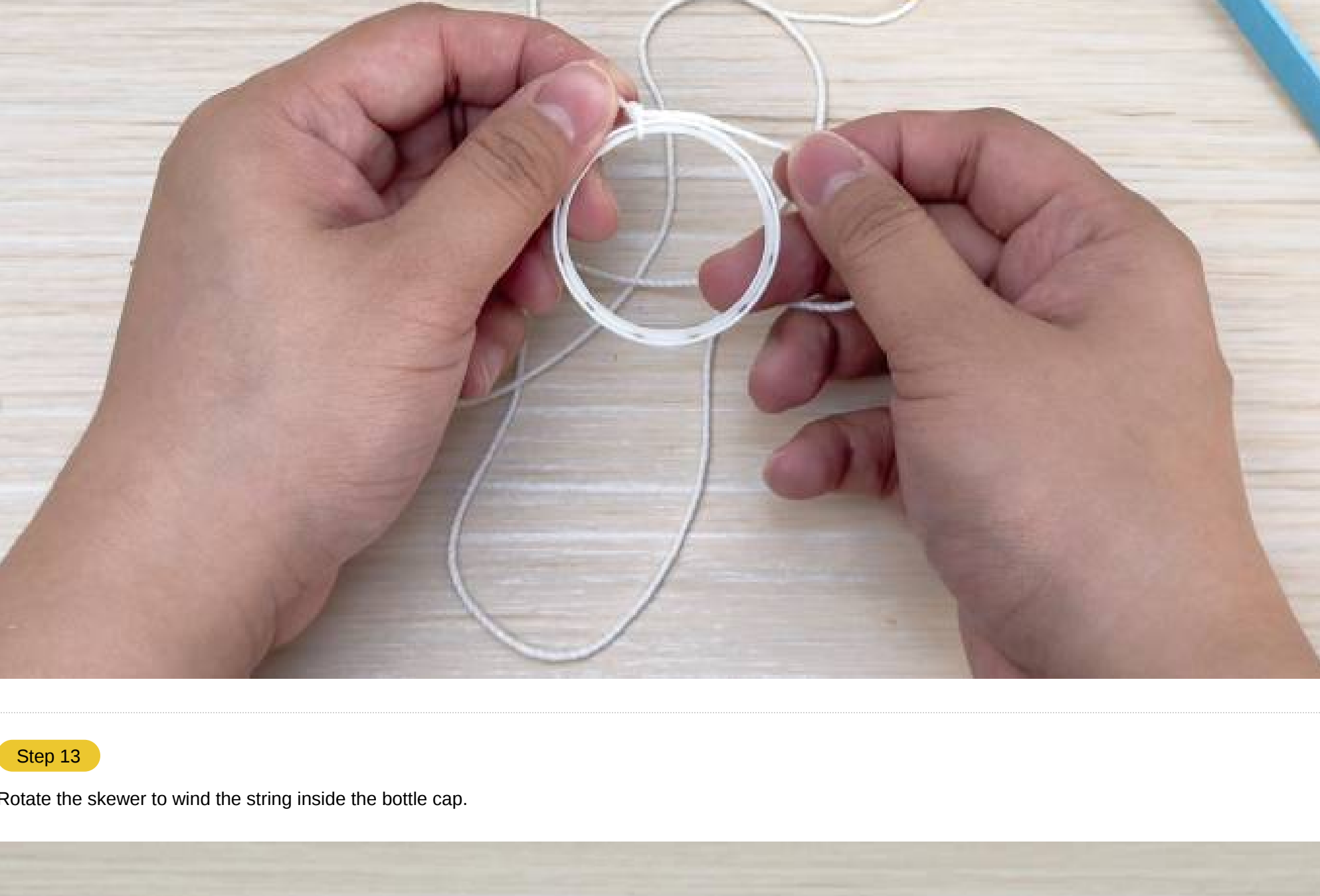
Step 12

Tie the ring to the other end of the string. This will be your pull ring.



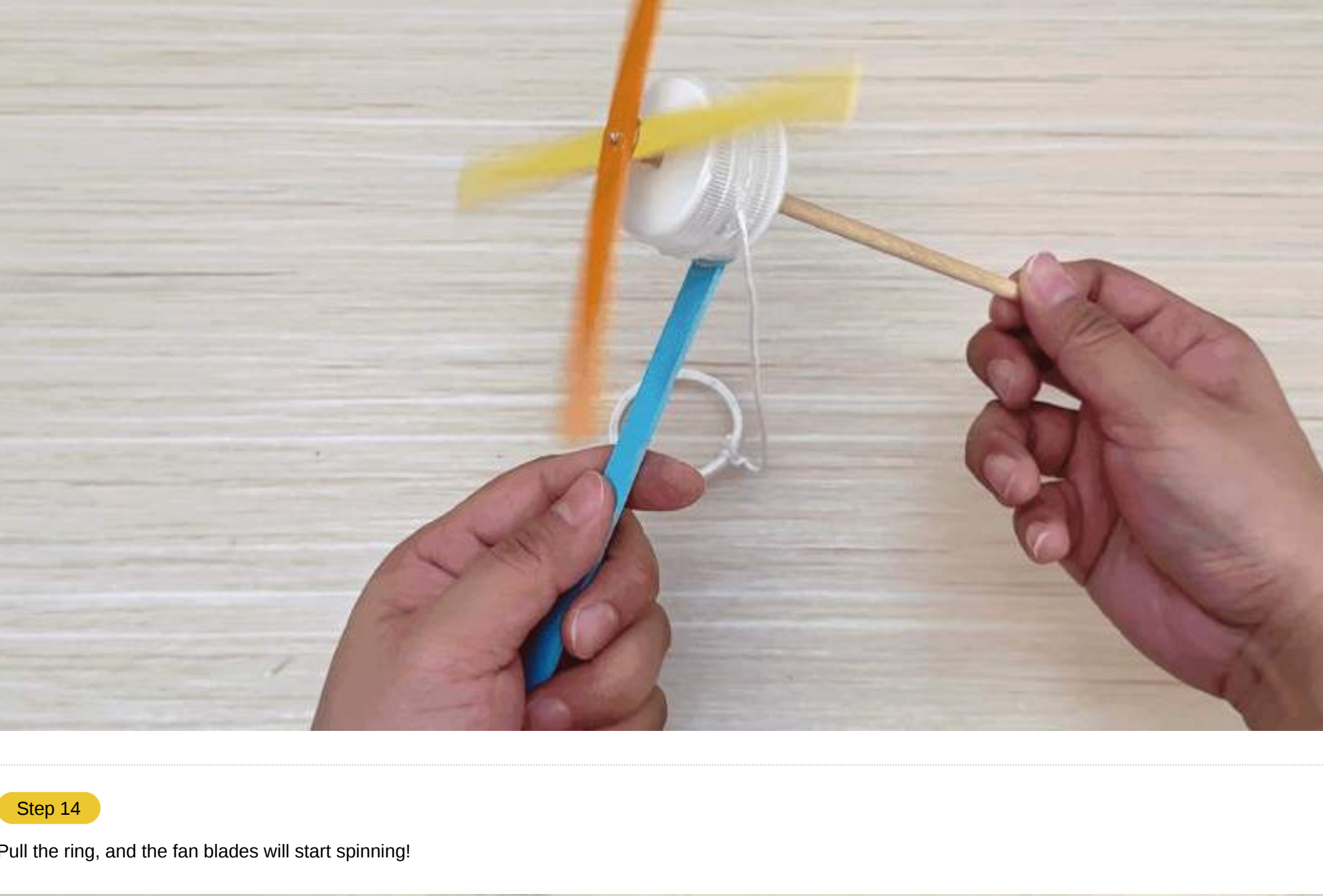
Step 13

Rotate the skewer to wind the string inside the bottle cap.



Step 14

Pull the ring, and the fan blades will start spinning!



The Science Behind It:

When you pull the string, the force is transferred through the string to the skewer because the string is wound around it many times. As the skewer rotates, the fan blades attached to it spin, pushing air to create wind. It's like a pulley system using string and skewer to transfer force and make the fan move. The harder you pull the string, the faster the fan spins and the more wind it creates!

You might wonder why the pulled string automatically winds back. This happens because the string wound around the skewer creates an elastic energy storage system. When you pull the string, the stored elastic energy is released, and when you let go, the string quickly winds back as it tries to return to its original state.