

# Design Challenge



**Extraordinaire:** The Pirate

**Design Project:** Something for carrying things

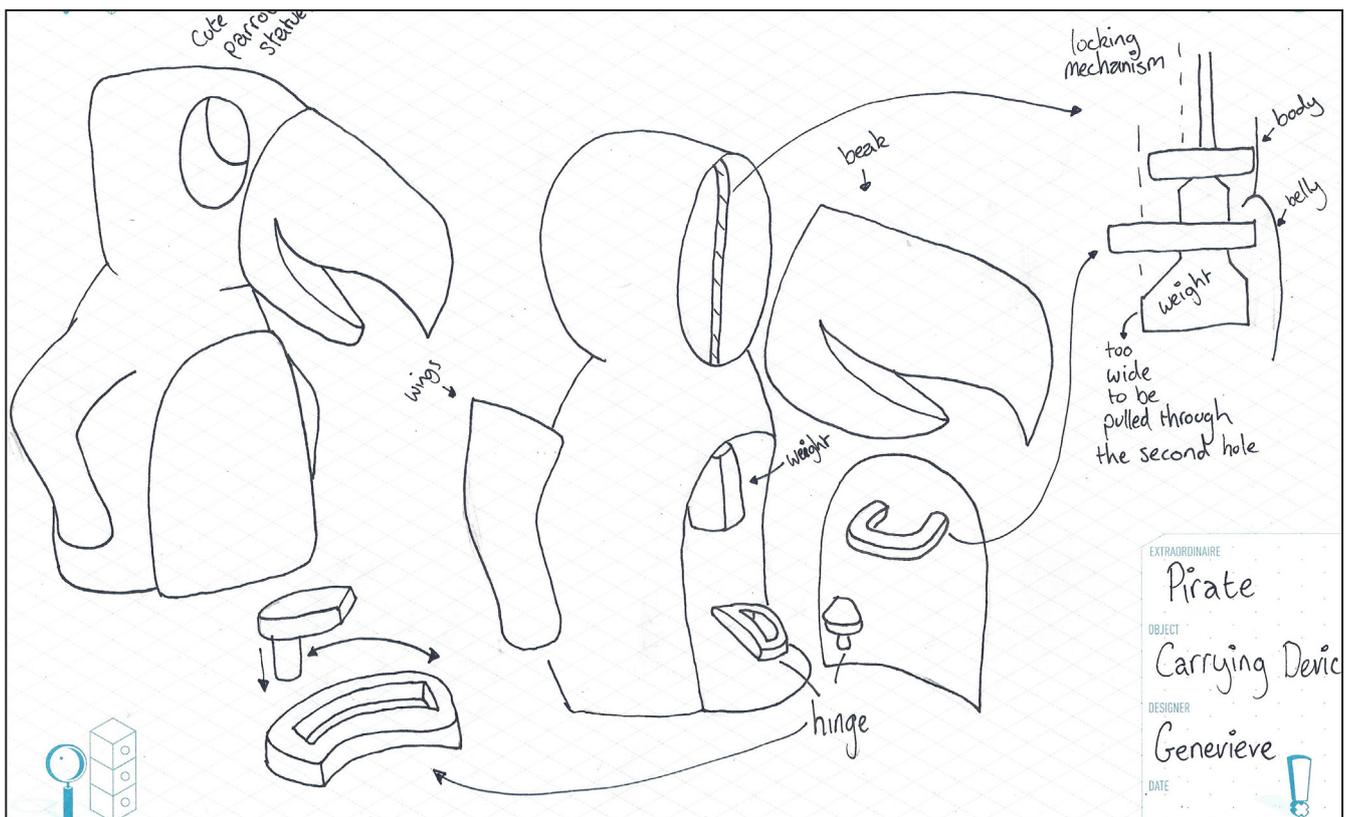
## About the Extraordinaire

The Pirate explores the seas, searching for treasure and adventure. The weather can be stormy and dangerous, so he needs a special container to keep his personal treasures safe from rolling overboard.

The pirate's hook hand makes doing some everyday tasks difficult, including opening and carrying things. Any container he uses must be designed to take this into consideration.

Finally, the shape and style of the container should complement the Pirate's two favorite locations – his ship and his exotic pet shop. By making the container into the likeness of a parrot, the container easily blends into his surroundings.

**Design Solution:** The Parrot Statue



## Materials

- A 2.5 lb. container of air-dry clay
- Plastic wrap/cling film
- Tape
- Scissors
- A mug
- A polystyrene ball with a similar diameter to the smaller part of your mug
- Paints
- A cylinder with a similar diameter to your polystyrene ball
- Newspaper
- String
- A weight

## Procedure

1. Firstly, take your mug, ball and cylinder. Cover each item individually in two or three layers of plastic wrap, followed by two or three layers of tape.

*The tape is what provides you with a rigid structure to apply the clay to. Use lots!*

2. Once everything is covered, use a pair of scissors to cut a single line up the side of the structures you have made. Remove the object inside.

3. You need two mug structures, so re-wrap the mug following steps one and two again.

4. Taking one of the mug structures, draw the rough size and shape of the parrot's belly on the side; being sure to avoid the protrusion where the handle was. Cut the shape out.

5. Now that you have a template for the belly of your parrot, pick up your other mug structure. Using your belly template, draw the rough shape of the belly, over the section where the handle was protruding from the rest of the mug shape. Be sure to make this shape slightly smaller than your template. Cut out the belly shape, leaving you with a belly template and the structure for the body of your parrot.

*It would be a good idea now to tape up the cut you made along the side of your body structure when you removed the mug. If you want, you can also tape the inside of these structures to help them keep their shape!*

6. The structure you made using the polystyrene ball now needs a wider opening. Using your body structure as a guide, cut the structure so that when the head is attached to the body they would form one piece. Similarly, the head should be open at the front.

7. Finally, move on to the beak. Pick up the structure you made using your cylinder, cut off the back and tape up the incision you made to remove the object inside. Draw the shape you want for your beak on the front and one side of your structure.

*DON'T WORRY! Because the outside of your structure is tape, most water based felt-tip pens will rub out if you made a big mistake.*

**8.** Flatten the cylinder structure, making sure that the edge of your flattened structure lines up with the symmetry of the beak. Proceed to then cut out the beak.

*Because you flattened the cylinder the beak structure should be symmetrical! Once you have the shape you want, simply round the sides of your beak back to its original shape.*

**9.** Now it's time to get messy. Stuff your body structure with newspaper and begin to wrap clay around the outside.

*Using Clay: Ensure you have water nearby, as you need to keep your hands damp when working with clay. This is air-dry clay, meaning it does not need to go in a Kiln! But it also means that any clay you leave on the side will begin to harden if you leave it for too long; make sure you keep your clay supply damp! You can make your clay too damp, so try and keep the balance. Once your clay is set, it is set.*

**10.** Continue sculpting the clay around your structures until each resembles their corresponding body part. Leave each piece in a set (preferably sunny) location.

*This will take a few hours! Make sure your pieces are in a safe location, if they fall or tip over while setting, they may not look how you want them to.*

**11.** The weight needed for your locking mechanism needs to have two different thicknesses so it doesn't get pulled too far up. I used a piece of wood with a hole drilled in the top for the string to fit in, and clay wrapped around the bottom to increase the width, as these are materials the pirate is likely to have.

**12.** Once the outside of the body and belly are set, you can remove the tape structure and begin making the hinge and the locking mechanism. To make the hinge, you need to create a horizontal protrusion from the inside of the door. Attach a small cylindrical piece of clay to the underside.

**13.** Placing the belly against the body, open and close the door, making a note of where the centre of your protrusion passes over. Create a similar, parallel protrusion on the inside of the belly, and then carefully shape it to follow the path of the belly. Remove the inside, so that the small cylinder slots into the body hinge piece.

*This will need to set completely before it works properly, so make sure nothing nudges the hinge pieces out of position while they are setting!*

**14.** For the locking mechanism, you need to create two hollow square shapes, one which is big enough for your weight to pass all the way through, and one which is only big enough for the smaller dimension of your weight to pass through. Attach the larger square to the centre of the inside of the belly door, making sure that it doesn't interfere with the door opening. Attach the smaller square slightly above the larger, but to the inside of the body.

**15.** Now that the intricate pieces are in place, you can work on the wings. Create two right angle triangles out of clay, long enough to be wings for the size of your bird. For each, round off the edges of the hypotenuse side, and attach them.

*I recommend leaving the wings, hinges and locking parts to set at this point. They may get moved around a lot during this next step if not!*

**16.** You can now attach the head! Making sure the beak can still attach easily as you go, use extra clay to create a join between the head piece and the body.

**17.** Once the head is in place, you can feed the string with the weight attached up through the squares you attached to the inside of your parrot earlier. Place the door into its hinge part and gently lower the weight until it is in a position where it stops your door from opening. Keeping the weight in place, attach the string to the inside of the head using clay.

**18.** Finally, you can attach the beak and leave everything overnight to set. In the morning you can paint your parrot!

*Acrylic paints are excellent for this!*