INFLATABLES

Duration: 15-30 minutes
Institution: Science Museum of Minnesota
Skill level/Age Level: 3rd Grade - Adult
Group size: 1-2 participants, or 3-6 participants on collaborative projects

INTRODUCTION

We learned about Inflatable by looking at a video about artist Joshua Allen Harris' street art: Inflatable Bag Monsters. Joshua created a series of whimsical sculptures that inflated over subway vents. The video shoes the sculptures, made from recycled trash bags and tape as they appear and disappear with each passing underground train.

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KEY CONCEPTS AND/OR SUBJECT AREA (STYLE: HEADING 1)

In teaching about designing in 3D it has often been hard to introduce activities that give immediate hands –on experience with spatial reasoning that also involve participants in an open-ended process. This activity is a great way to explore working and thinking with materials in three dimensions, especially with the low coast of materials and tools.

MATERIALS AND TOOLS

Essential Materials:

- Plastic for constructing
    a. Recycled plastic shopping bags (you can ask groceries who collect these it you can take them in quantity)
    b. New bags—in a range of colors—black, white, blue, green, pink
    c. Plastic sheeting (2 mil plastic drop cloths work great)

- Scotch tape, transparent tape on rolls (masking tape and packing tape tend to be too rigid to use unless you are building BIG structures)

- Tag board (poster board) strips 2” x 18-24” for base

- Large paperclips
- Stapler and staples

- Scissors (adult scissors with sharp blades work best
- Utility knives

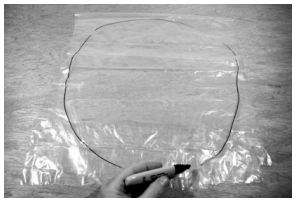
- Permanent markers (sharpie style—dark for light plastic, and silver/metallic for dark or black plastics)

- Fan (s) that tilt horizontally to blow air up or a basic box fan set horizontally on a milk crate (for air flow)

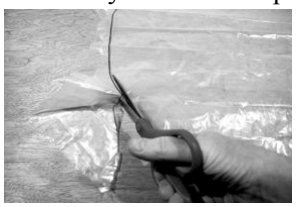
SET UP

The inflatables activity can take up a lot of table space so you make want to plan for a couple or more work surfaces. Eight-foot tables work well. Your fans can sit on the table or on the floor as testing and displaying zones.

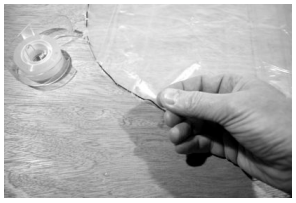
HOW TO OR STEP-BY-STEP



1. Make a simple inflatable—a head. We'll draw the features—eyes and moth—but to give it dimension it will have a nose that sticks out. The share of the head will be a circle.
    a. If you use sheet plastic use enough to double it over (for the other side).




2. Use your marker to draw a circle
3. Once finished drawing carefully cut out the circle in both the front and back pieces




4. Carefully line up the top and bottom pieces and start taping them together from back to front. You will tape most of the way around the edge.
5. If you pull the top piece back a bit you can tape it flat which is easier and faster. You do not need to cover every inch of the edge with tape—there can be open spots

6. When you are nearing the end leave an opening a bit larger than your open hand.

7. Now reach inside and turn the plastic form inside out.


8. Next furl one of the tag board strips into a circle that can just fit inside the opening. Staple it once you have the size right and trip the excess
9. Then fit it back into the opening of your inflatable and staple the plastic all around the ring
10. Your shape now has a rigid opening for the air and a base to connect it to the fan


11. Time for art! Go ahead and draw the features. We will draw the nose so we know where it is—we are going to make a 3D nose so we need to mark the spot.
    a. You can keep the face simple or really get into the details.
    b. You should do them now when you can smooth the face flat for easier drawing


12. Using the marker lines as your guide snip out a hole where the nose is marked. Then we'll use another piece of plastic for constructing the nose


13. We cut out a smaller piece and fold it over to make a triangle, taping the opposite side from the fold. Leave the third side open


14. Turn the nose inside out and then push most of the nose form through the opening in the face

15. Leave some of the nose to tape down on the inside all around the edge of the nose hole


16. The final construction step is bending the big paperclips open into an “S” shape and then taping down half of it to the inside of your tag board ring (or neck).
    a. These will be the hooks to hold your inflatable to the fan
    b. Use at lease two hooks

17. Carefully hook your creation to the fan guard and turn on the fan

FACILITATION TIPS

This project can be overwhelming is the participant tries to be “perfect”. Encourage them to draw then cut then tape in that sequence and tape quickly—you absolutely do not have to tape the whole seam. Using fewer pieces of tape is often better as it lets the inflatable “breathe” a bit. This project also encourages testing and iteration—build it roughly, test it on the fan to see what happens, then adjust/fix/add-to as you go.

FACILITATION PROMPTS AND QUESTIONS

- Why can we leave so many openings in the sides?
- Why do we turn the shapes inside out after taping the shape?
- How can you make your inflatable kinetic?
- How big can you build it?
- Do you sew? How does this activity relate to sewing?

MATERIALS SOURCES

- Street Art: Joshua Allen Harris’ Inflatable Bag Monsters: https://www.youtube.com/watch?V=PH6xCT2aTSo
- Teacher blog post: http://amyschleserateducator.wordpress.com/2011/05/01/inflatable-sculptures/
- Making patterns from 3D objects without computers or fancy math: http://www.instructables.com/id/making-patterns-from-3D-objects-sans-computers-or-/
- Improving spatial skills in children and teens: Evidence-based activities and tips: http://www.parentingscience.com/spatial-skills.html