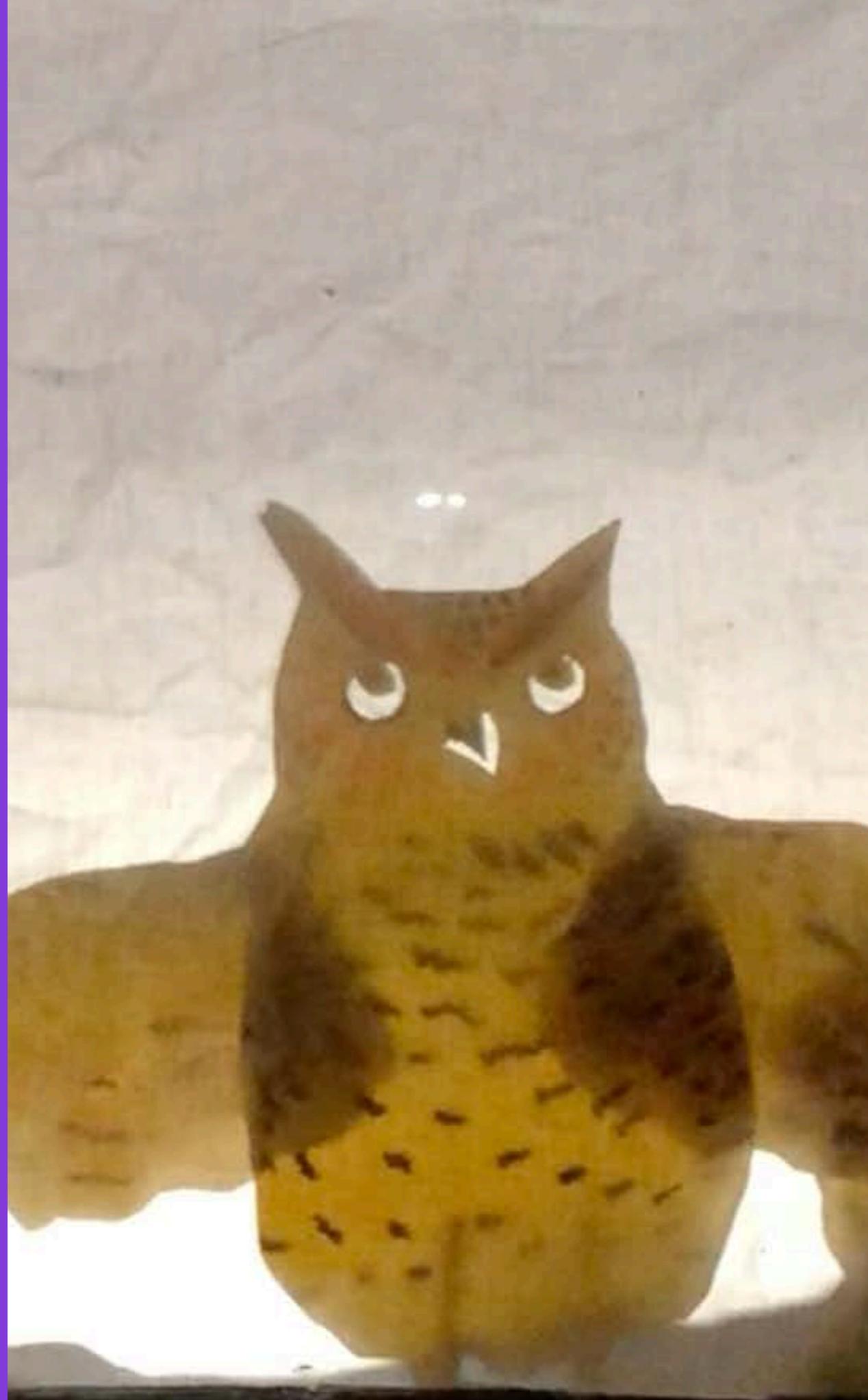


STEAM PROJECT BY ARTIST JESSICA LING FINDLEY

WAVING WITH LIGHT WAVES

What can you see in the dark?
Make an evening shadow
puppet show for your neighbors
and investigate light and
shadow.

ESTIMATED TIME: 1-2 HOURS



Materials Needed

- pencil
- heavy paper / poster paper / index cards or two sheets of regular paper glued together
- scissors
- crayons or markers
- pencils/ chopsticks/cardboard/ utensils
- Tape (packing tape works well)
- optional paper fasteners or buttons and yarn
- flashlight or lamp
- light colored solid bed sheet / newsprint paper / velum paper / tracing paper
- a window to do the puppet show in after dark



STEP 1

CHOOSE AN ANIMAL & DRAW ITS BODY AND LIMBS

- Thinking of the size of the window, draw the outline of an animal onto the heavy paper or two with its legs, arms or wings separate from the body.
- The arms and legs need to be a little longer to connect with the body when we build the puppet.



STEP 3

CUT OUT AND ASSEMBLE YOUR PUPPET

- Cut out all the body parts.



STEP 2

DECORATE

- Decorate the body parts with crayons or markers. Look at the picture for reference for color shape and texture.



STEP 3

CUT OUT AND ASSEMBLE YOUR PUPPET

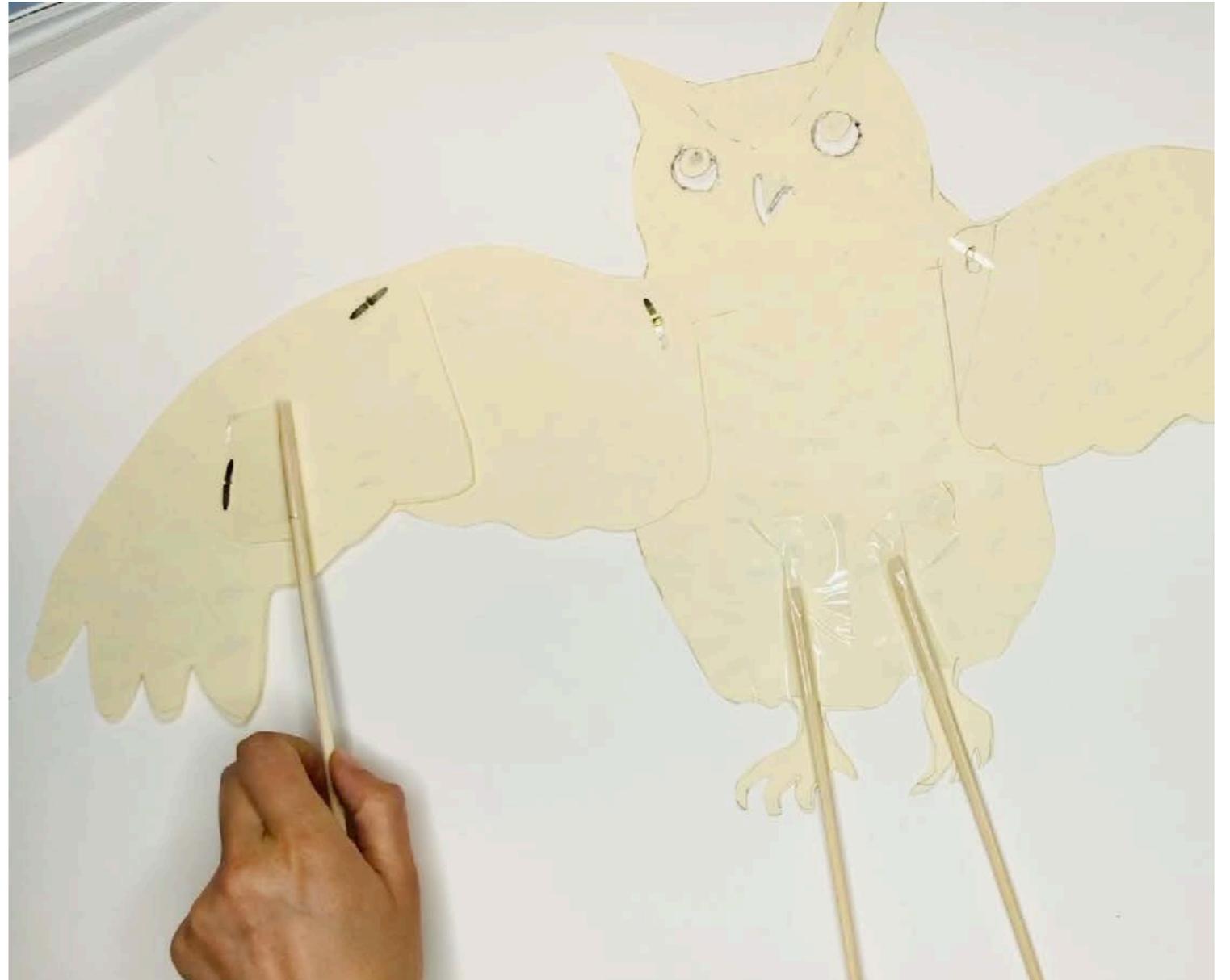
- If you have fasteners or buttons you can poke holes with a pencil for the fasteners and attach the legs, arms or wings to the body at the joints, otherwise you can glue the parts in place.



STEP 4

ATTACH YOUR STICKS TO YOUR PUPPET

- Attach the sticks using tape (packing tape works great) to the body and if you used fasteners for mobile joints you can add a stick to the end of the leg, arm or wing.
- You can also tape paper to the sticks and use fasteners for more mobility.



STEP 5

SET UP YOUR PUPPET THEATER WINDOW

- Hang a sheet or a paper inside your home window.
- Hold the puppet close to the sheet and place the flash light or lamp behind you.
- Be sure not to block the shadow with your body.



STEP 5

PUT ON YOUR PUPPET SHOW.

- When the sun goes down and its dark outside, take turns with a household member performing and watching the puppet show.
- Start with the flashlight light off then turn it on.
- How does the shadow puppet work? Does it work in the day time?
- When can you see the puppet? Can you see the colors on your puppet? Why?
- Can you see the color of your hand? Why?
- Take a picture outside and examine: Which areas are the darkest? Why? What is opaque (blocking all light)? What is translucent (allowing some light through)? The puppet? The window frame?your hand? Can you list the most translucent to the most opaque?



COMBINING ART AND ENGINEERING OBJECTIVES / STANDARDS

NGSS Standard Grades 1

- **1-PS4-3.** Plan and conduct investigations to determine the effect of placing objects made with different materials in the path of a beam of light.

VAPA Standards

- **3.MA:Cr2** Form, share, and test ideas, plans, and/or models to prepare for media arts productions.



VOCABULARY

- Puppetry
- Illuminate
- Shadow
- Opaque
- Translucent
- Joints

PUPPET RESOURCES

- Indonesian Shadow Puppetry:
<https://www.youtube.com/watch?v=pfydro4X2t0>
- Chinese Shadow Puppetry:
<https://www.youtube.com/watch?v=ZoMoZyX53UU>
- How to build a Shadow puppet box:
<https://www.youtube.com/watch?v=BHw-4UOcj40>

**CREATED BY ARTIST JESSICA LING
FINDLEY IN ASSOCIATION WITH COTA
(COLLABORATIONS: TEACHERS & ARTISTS)**

MORE LESSONS BY THE ARTIST

www.JessicaLingFindley.com/lessons

