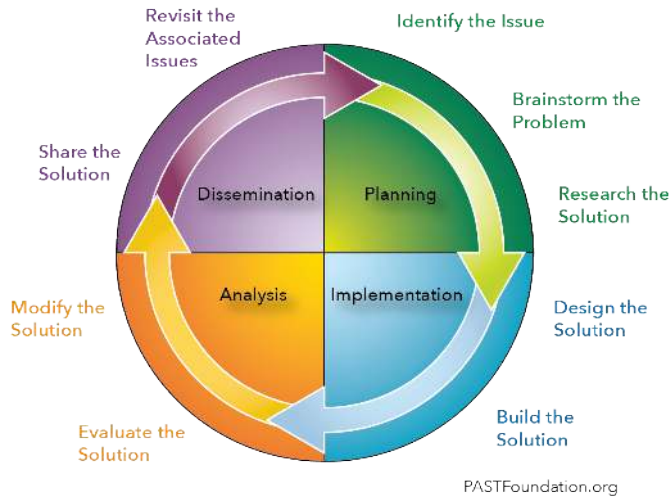


Bottle Flowers Mini Challenge

Name: _____

Date: _____



Problem Scenario:

How do we model flowers and their unique botanical structures using simple tools and geometry?

Challenge:

How do we:

- 1) Explore symmetry in shapes.
- 2) Use geometry in art?
- 3) Understand the biology of flowers?

Criteria/Supplies:

2 Liter Bottle/ Fingernail Polish/ Paint/Pipe Cleaners/String/ Scissors/Markers

Label the parts of the flower when completed

Identify on the model where pollination takes place

1. Brainstorm: Use the space below to brainstorm the design and approach to building a flower.

- What makes a flower?
- How do flowers grow?
- Why do the parts of the flower matter?
- Do all plants have flowers?
- Why do flowers have smells?
- Do curved shapes make more sense?

2. Design:

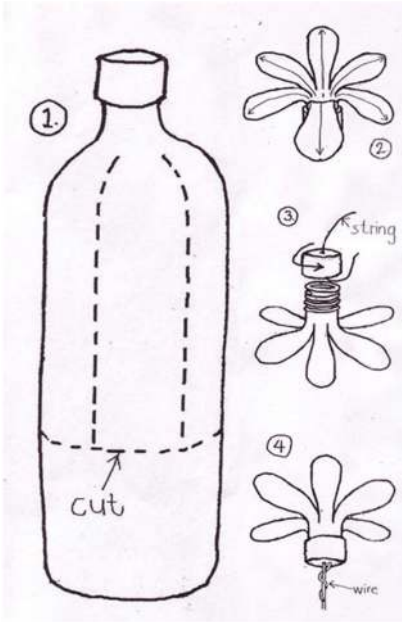
- Determine what kind of flower you want to create.
- How many petals?
- How many stems or do you want a lei?
- These choices will determine how you assemble your bottle flower design when you build it.

3. Build:

1. Cut the bottle of the bottom off.
2. Keep the bottle neck and lid as one unit.
 - See fig 1.
3. Trace the pattern of the number of petals you want your flower to have.
4. Fold petals back to create a flower with the throat in the bottle neck.
 - See fig 2.
5. Carefully punch two holes in the bottle cap.
6. Remove the bottle cap.
 - See figure 3.
7. Run a piece of string through one hole and then string many flowers.
 - See fig 3.
8. Run a wire through one hole and then through the other and twist.
 - See fig 3.
9. Carefully twist the wire together. This will be your stem.
10. Return the bottle cap to your flower.
11. Decorate your flower with markers, paint or fingernail polish.
12. Try making your own flower creation!

4. Evaluate:

- Does your flower make sense?
- Can an insect use it?
- Can an animal eat it?
- Is it like what you see in nature?



5. Modify

- Explore the biology and communities of all flowers and their body plans and their differences.
- Challenge them to consider testing and modifying the design and recording results.
- Let the students explore scale, populations, geometry, line, and curves. Track the progress
- Consider viewing the flowers in different types of white, black, and colored light.
- What happens if flowers are larger or smaller? Does the design and build change a lot?

6. Share:

Share your creation on Social Media!

Tag us on Facebook, Twitter or Instagram @pastfoundation

Use the hashtag #ThisIsPAST or #DesignThinking