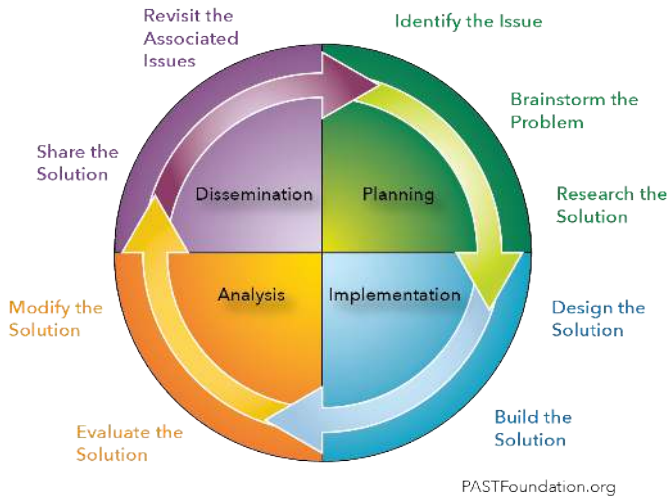


Bottle Bugs Mini Challenge

Name: _____

Date: _____



Problem Scenario:

How do we model insect and arthropod bodies using simple tools and geometry?

Challenge:

How do we:

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

Criteria/Supplies:

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

Label the parts of the bug when completed

Identify where pollination takes place

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

- What makes an insect?
- How do insects move?
- How do insects fly?
- Do all insects fly?
- How many words for insect are there?
- Do curved shapes make more sense?

2. Design:

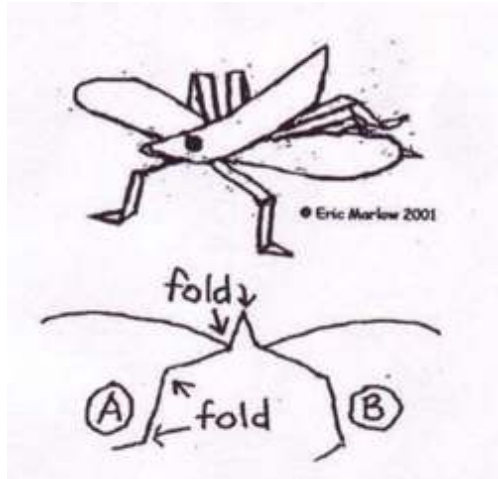
- Determine what kind of bug you want to build.
- Do you know about its habitat?
- What does it eat?
- How does it move?
- How does it react to danger?

3. Build:

1. Cut a bottle top and bottom off.
2. Flatten the blank plastic.
3. Fold plastic in half.
4. Folding with the natural curve of the bottle is easier.
5. Trace the pattern of the insect body onto the folded blank.
6. Make sure the patterns match before you cut them out.
7. Fold up the wings and legs (see illustration).
8. Fold legs out to make bug stand (see illustration).
9. Fold leg tips under to make bug hold on to things (see illustration).
10. Decorate your bug with markers, paint or fingernail polish.
11. Try making your own bug creation!

4. Evaluate:

- Does your Bottle Bug make sense?
- Can you tell what it does in nature?
- Can your family or teacher?
- Does it have a name?



5. Modify

- Explore the biology and communities of all insects 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 their progress.
- Consider viewing the insects in different types of white, black, and colored light.
- What happens if insects are larger or smaller?
- What happens when you build insects by fashioning a head, thorax and abdomen?
- 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