Engineering Design Notebook

Name:

Balloon Propelled Boats
The force to move the boat will come from an inflated balloon.
You will inflate and install the balloon before launching the boat, and then let the balloon deflate.

*Design questions come from Design Squad Resource*

The Problem-Shipping Speed

Most boats and ships have the same basic shape and design. They are longer than they are wide, and typically they taper to a point in front. The pointed front acts like a wedge. It pushes the water to the side as the boat moves forward. If a boat were flat in the front, like the blade of a bulldozer, then water would build up against the front of the boat and slow it down. **Suppose you are a nautical engineer working for a ship building company. Your company supplies ships to other companies that transport goods across the ocean. Your clients have said that they need ships that can travel across the ocean more quickly and that can carry more cargo than their older ships.** How can the design of a boat be changed to increase its speed or the weight it carries?

Imagine-Brainstorm- How many different ideas can you come up with?

Student drawn boat design "Taylor"
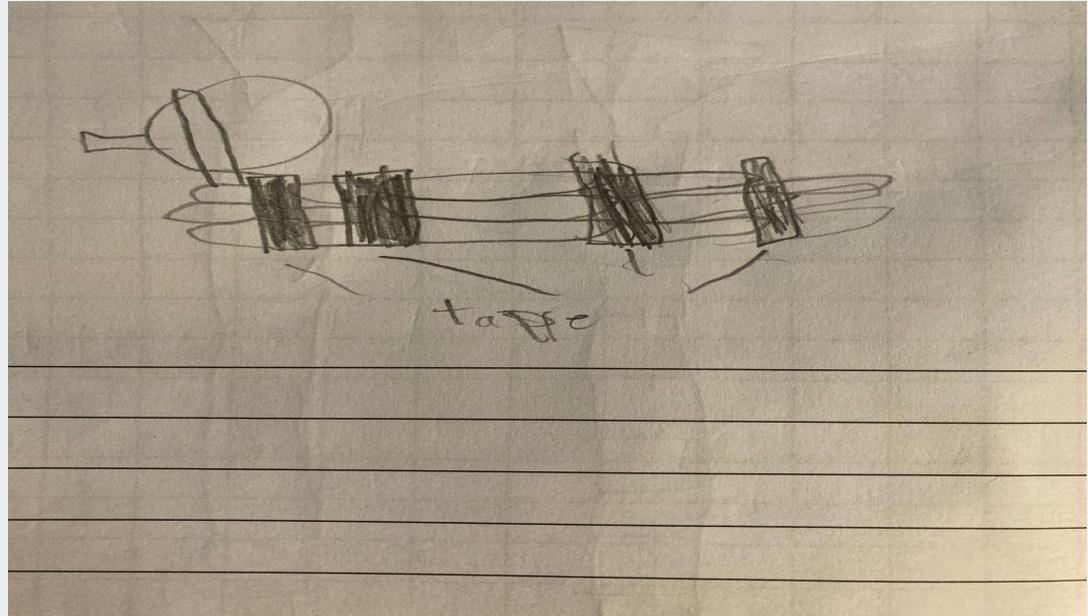
Design Your Boat

What goals are you trying to achieve?
How might this idea look on paper?
Do you have enough time to build this design?
Do you have materials that can work with this design?

Using your brainstorm sketch and use the listed supplies to begin building your boat.

box of pencils (unsharpened)

1 large latex balloon   drinking straws

 rubber bands   1 disposable aluminum baking pan or pie pan

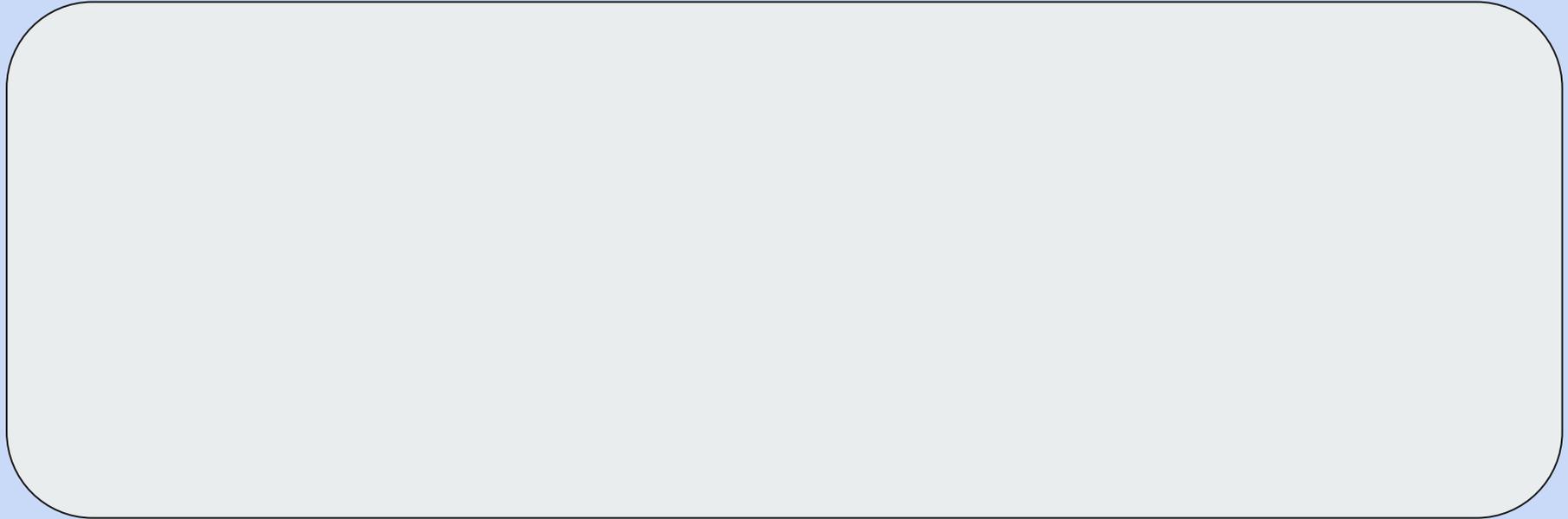1 roll of aluminum foil   1 roll of duct tape

Popsicle sticks   Clothespins
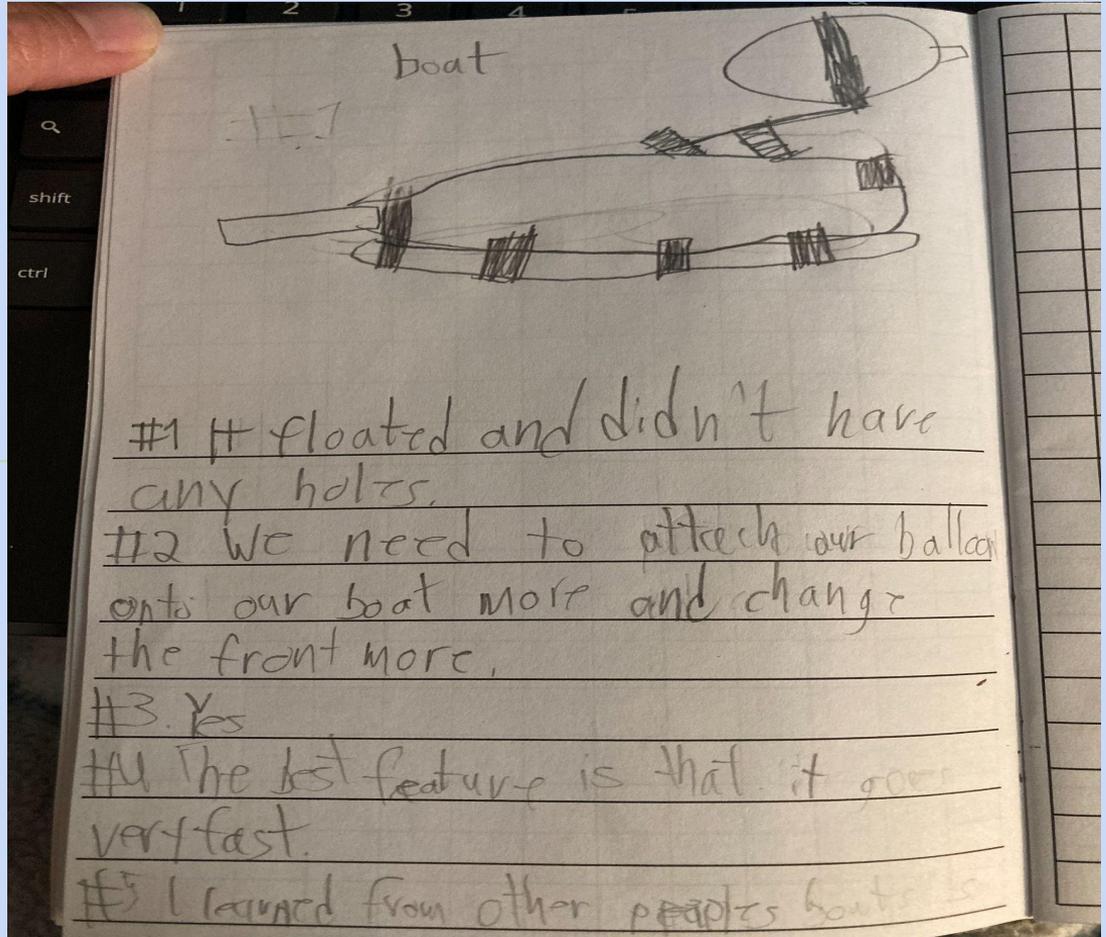
Design Your Boat

Build Your Boat

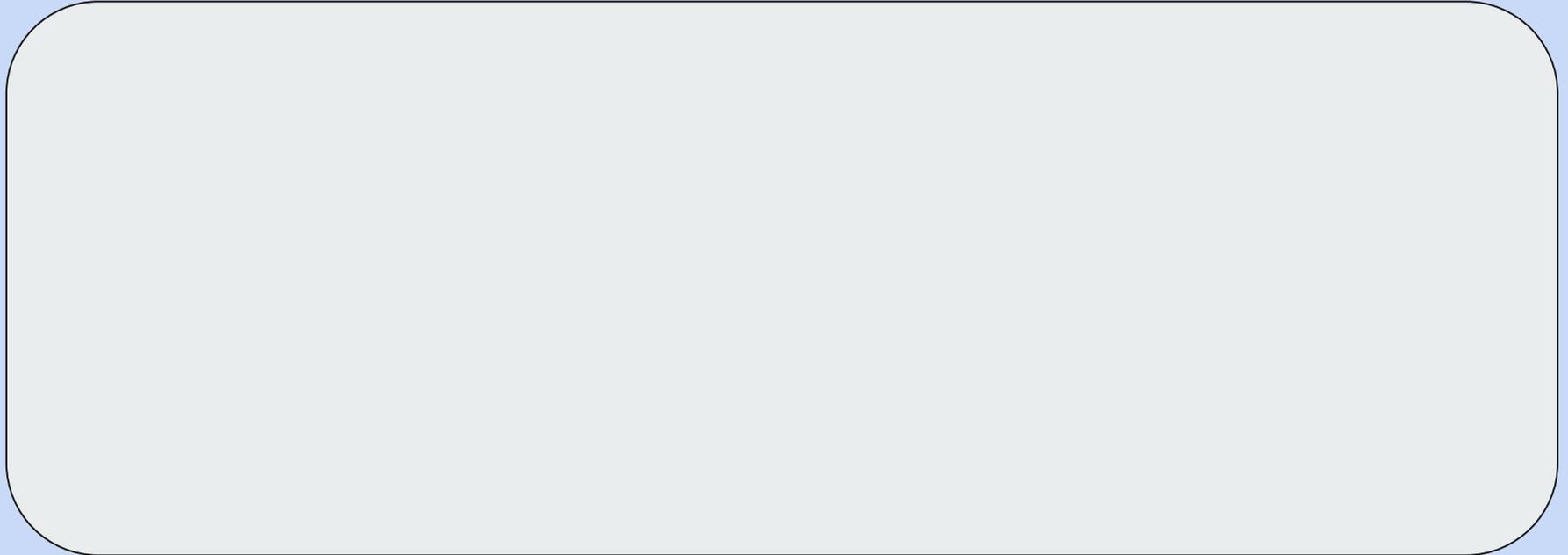Students building their boat with their partner

Test and Evaluate

1. What works well?
2. What could work better?
3. Does your design meet the goal of the challenge?
4. How?
5. What did you learn from other Peoples design?

boat

#1 It floated and didn't have any holes.
#2 We need to attech our balloon onto our boat more and change the front more.
#3. Yes
#4 The best feature is that it goes very fast.
#5 I learned from other peoples boats is

Test and Evaluate Response to Questions

Redesign/Share Solutions

What do you think is the best feature of your design?

What were the different steps you had to do to get your project to work the way you wanted?
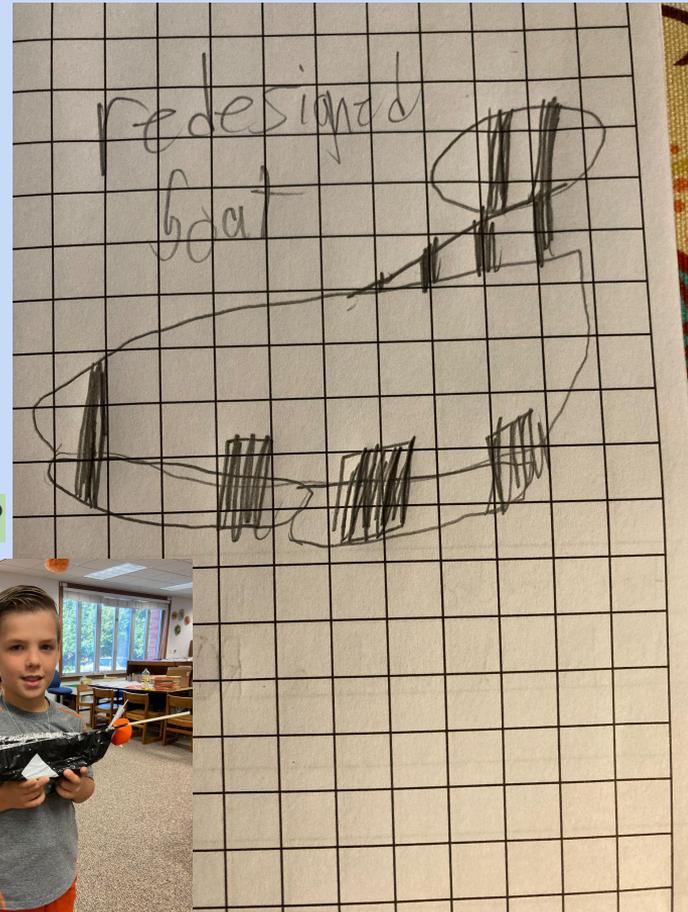
What steps of the design process helped you the most?

What did you learn from watching other kids?

What are some things everyone's designs have in common?

Who might use what you've designed, and how would it help them?

If you had more time, how could you improve your design?

Share Solutions Respond to Questions