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9 For the Teacher

The Challenge

There are a number of variations of boat-building activities, but this one is more challenging than most because of the minimal construction materials students are allowed to use.

The Rules

1. Have students work alone or in teams.
2. You will need to supply each student or team with a measured amount of non-water soluble modeling clay. I have found 4 to 5 ounces (around 125 grams) to be a challenging amount.
3. You will also need to set up a tank of water ahead of time. A 5-gallon aquarium should suffice, but a 10-gallon aquarium would be even better as it could accommodate extra-large boats.
4. I suggest using pennies for weights to test the boats. They are uniform size and weight and easy to handle and count. You can either express the total pennies held by each boat or convert the number of pennies to a total weight held. One penny weighs approximately 0.1 ounce (2.5 grams).
5. The day before, I weigh a ball of clay for each team and set up the test tank. The next day, as the students (or teams) come in, they get their clay. I issue the challenge and let the students pick teams (if you wish them to work in teams). Set a time limit for construction. I give my students one class period to construct their boats. Leave enough time at the end of the period for final testing and cleanup.
6. When students or teams have completed their boats, have them bring the boats to the test tank. Have the student or one of the team members place the pennies on the boat while another team member or student carefully uses a soda straw to keep the boat from touching the sides of the test tank. For effect and accuracy, I have the entire class count as each penny is added.
7. Things can get a little wet during this activity, so have some towels handy.
8. The boat that holds the most pennies before it totally sinks should be declared the winning design. Occasionally, boats will have water come over the top but not totally sink until a few more pennies are added. I suggest you keep adding pennies and counting until each boat totally sinks. Students should be made aware in advance how you will handle this situation should it arise.

Safety Tip

You might caution students about putting pennies in their mouths.

Awards and Recognition

1. Display a chart explaining the activity and showing the number of pennies each student's or team's boat floated.
2. Make and present a "Captain Capsize" award to the winning student or team.
3. Buy a cheap plastic child's toy boat as a gag trophy, and present it to the winning student or team.

Display all charts, awards, or trophies where they may be appreciated by other students, teachers, and parents.