Teachers' notes

Sail 'n Soar

Mucking about with boats & sails!

This teachers' supplement should be used in conjunction with Project Pull-out #6, which is found in DMAG's issue 56. This pull-out introduces children to the complex properties of air and water and how we create machines to harness these renewable resources. The activities in this supplement will further this exploration.

This supplement encourages students to:

- Gain an appreciation of the power of air, wind, and water
- Achieve a rudimentary grasp of aerodynamics and buoyancy
- Combine creativity and logic when problem-solving
- Make predictions based on information they collect
- Explore alternate forms of transportation and power
- Follow instructions and procedures

Science and Technology Content Focus: Physical Phenomena, Earth and its Surroundings

Student activity suggestions to integrate into your classroom program:

Buoyant boats

Have students read the blurb, "How boats float," on page 51. Ask them to think and hypothesise about the type of shape a boat – especially one that is made of material that sinks – would need to stay afloat, then have them test it: divide them into groups and give each group several pieces of clay, and a pan of water. First, have them squish the clay into a ball and drop it in the water to see if it floats or sinks (it will sink). Then have them experiment with other pieces of clay to see what shapes will make the clay float. What was important about the shape to make it float?

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Science and Technology: working scientifically, natural and processed materials, Earth and beyond

Wherever the wind takes you

Have students read the story "Sailing and Soaring" on pages 52-54. Then, ask them to write a journal entry where they have their very own kite sled/cart. Where would they go? What would they see? Ask them to think about how a kite sled is different than driving in a car (not having to fill up petrol, more exciting ride, better for the environment, etc.)

English Writing: creative writing and thinking

Float your own boat

Using the instructions on pages 48-51, have students create their own boats. Before they build the boat, however, ask them to think about what type of boat they are building (cargo boat, fast boat, etc), and what type of water their boat will be designed for (calm, choppy, etc.). Using the internet, have them look up different shapes of hulls that would best suit their specifications, and then build their boat with that shape in mind. The student activity sheet can be used to assist in this exercise.

Science and Technology: working scientifically, natural and processed materials

Creative and Practical Arts: craft/ design

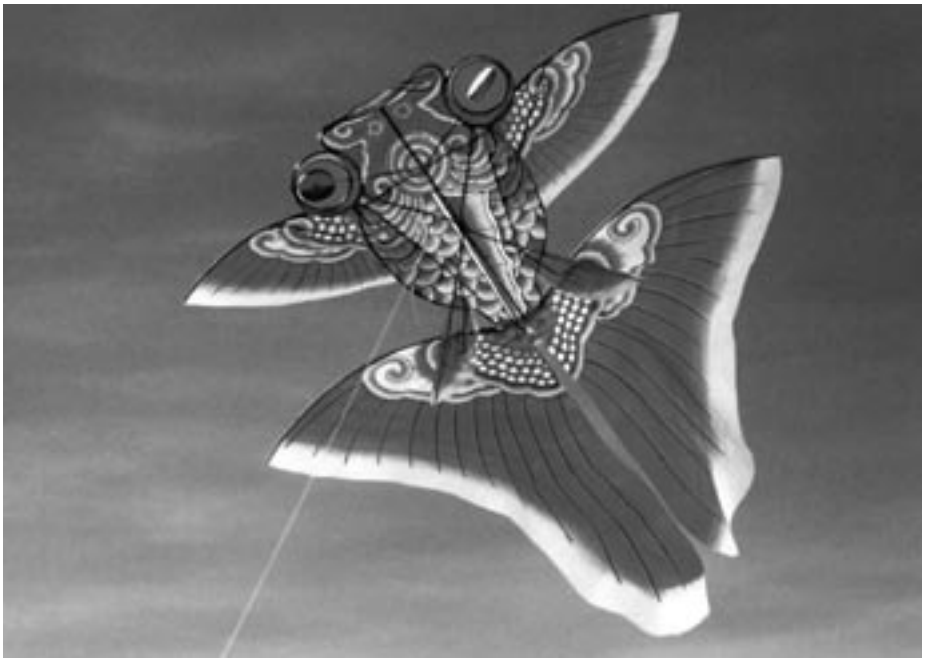
Nautical fun

On page 50, read the "Did You Know" section about the Bermuda Triangle, and then ask students to write creative stories to explain why all these boats go missing. Turn the short stories into mini-books using colourings and drawings.

English Writing: creative writing and thinking

Flying high

Have students look at the pictures of the different kites on pages 53-54. What makes these different kites fly?



As a class, brainstorm the type of properties a kite must have in order to fly. Using the link found in "Build a kite for a sled" on page 54, have students build their own kite, giving them a choice of different materials to work with (heavy versus lightweight paper). Then, let them try flying their kite outside. Which type of paper worked the best? Why? Bonus: Have them research Lawrence Hargrave and his special box kite, and have them think about the similarities between kites and other flying machines.

Science and Technology: working scientifically

Creative and Practical Arts: craft/ design

Where in the world...

Have students look at the map on page 52. Ask them to describe Greenland: its location in the world, its relative size, etc. Based on these descriptions and what they already know, have them discuss why Greenland may be so icy and cold. As an extra activity, pull out a different map and ask them to locate Greenland on the new map.

Mathematics: Mapping

Science: critical thinking; Earth and beyond

Student Worksheet

Sail 'n Soar

Mucking about with boats & sails!

This worksheet is to be used with Project Pullout 6, from the November 2006, Issue 56 of DMAG.-

BOAT HULLS

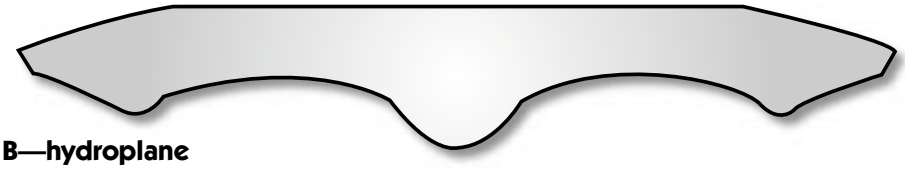
Do a search on the internet using the terms "Boat hull" and "drag".

What does the term drag mean when it is applied to boats?

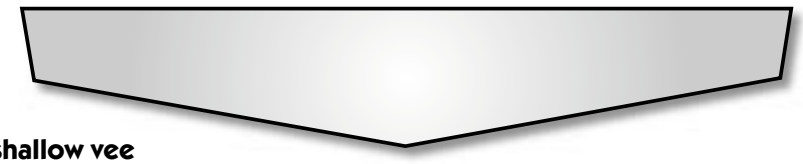
_____
_____
_____
_____
_____
_____
_____

Examine the four different boat hulls below. Think about what sort of water they would best be suited to. What are their strengths and weaknesses? Have your best guess, but consider things like drag and stability in different types of weather conditions.

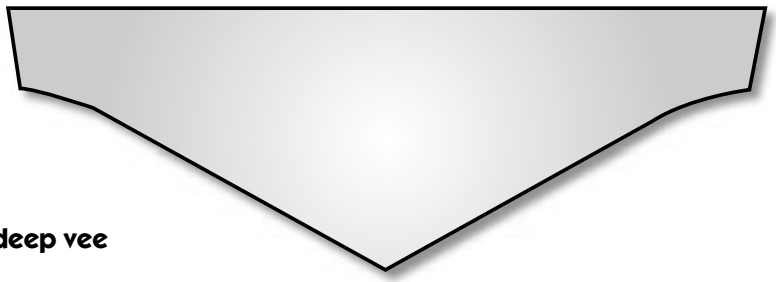
A—flat hull



B—hydroplane



C—shallow vee



D—deep vee

Boat hull	Description	Strengths	Weaknesses
A			
B			
C			
D			

Student Worksheet

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BOAT HULL DESIGN

How did you go with working out what boat hull was best? Here's what we found ...

A. Flat hull: Not much drag, because it is mostly on top of the water. But, in choppy water, it can get tossed around a lot!

B. Hydroplane (tunnel hull): The tunnel creates air pockets, which lift the boat into the air, giving it very little drag. That means it can go very fast, but it's not always stable on choppy waters because it is on top of the water more than in it.

C. Shallow vee hull: Pretty stable in the water, and has less drag than the deep vee hull, which means it can go faster. But, it is not as stable in choppy waters.

D. Deep vee hull: Good for choppy waters—very stable and can cut through chop on the water. But, since it is so deep in the water, it has a lot of drag, which slows it down.

DID YOU KNOW?

On ships, a scuttlebutt was a water barrel with a hole cut in it so sailors could reach in and get drinking water. Sailors used to hang out around the scuttlebutt and chat and gossip. Nowadays, to "get the scuttlebutt" means you are gossiping.

BOAT BUILDING

Now do some research on the internet or in books to see if you can find what sort of hulls these boats have. Draw the hull for each boat:

Viking longboat

Native American canoe

Speed boat

Container ship