



Photo by Marion Pintaux on Pexels

Float Your Boat!



Science



30 min



Ages 6-8 · Grade 2

This lesson challenges young learners to explore the science of buoyancy by designing and building simple boats. Through hands-on experimentation with everyday materials, children will discover what makes objects float or sink. It fosters critical thinking and problem-solving in a fun, interactive way.

Our goal is for your child to define buoyancy through observation and experimentation, design and build a structure that floats on water, and explain how shape and weight distribution affect an object's ability to float.

What You Need

Aluminum Foil • Small Objects • Water



Scan To Tailor

Every child learns differently, and this is just the baseline.

Scan to jump into the app and easily tailor this lesson to match your child's exact learning level and see how Mai will guide this lesson.



Ready for more adventures? Explore our **Sparks Hub** in the app

Lesson Blueprint

A simple, hands-on lesson that guides your child through curiosity, exploration, and reflection.



Mai's Tips

1. **Encourage multiple iterations:** The learning often happens when a design fails and the child has to figure out why and how to improve it.
 2. **Focus on asking 'what if: '** and 'why?' questions during the activity to promote deeper thinking, rather than telling them how to build.
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Prep Before Session

1. Gather the materials and choose a safe, comfortable place for the activity.
2. Read through the lesson once so you know where the child will make predictions, test ideas, and reflect.



1 Introduction 5 Min

1. Start by asking the child about their experiences with water and objects. Encourage them to share initial thoughts without judgment. Ask: "Have you ever seen a big ship float on water?" or "What about a tiny pebble – what happens to it in water?" Introduce the terms `floating` and `sinking`. To float means something stays on top of the water, like a rubber ducky. It's the opposite of sinking. To sink means something goes down to the bottom of the water, like a heavy rock. It's the opposite of floating. Prompt their curiosity with: "What do you think makes some things float and others sink?"

 **Done when:** Child expresses an initial thought or question about floating/sinking.



2 Explore & Plan 8 Min

1. Help the child gather the aluminum foil, small objects (like marbles or pennies), and a tub of water. Before building, challenge them to make a `prediction`. A prediction is your best guess about what will happen, based on what you already know or think. Ask: "What do you think will happen if you put this flat piece of foil in the water?" and "Why do you think that will happen?" Then ask: "What about one of our small objects? Will it float or sink?" Encourage them to briefly test their predictions to see what happens.

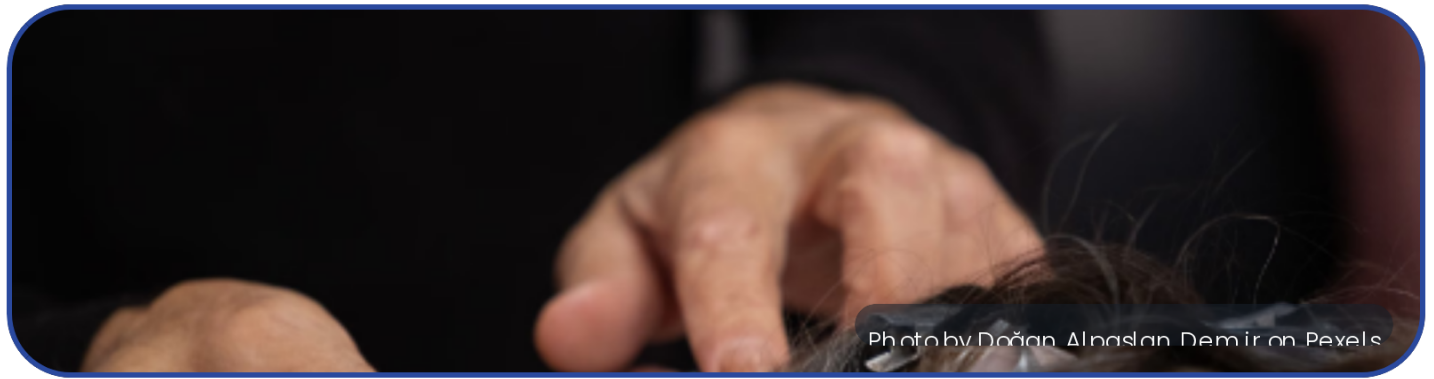
 **Done when:** Student has predicted outcomes for basic materials and is ready to move to discussion.



3 Discussion 6 Min

1. Have the child share their `observations` from the initial tests. An observation is something you see or notice carefully. Ask: "What did you notice about the flat foil when you put it in the water?" and "What happened to the small object?" Guide them to think about how shape might matter for floating. Ask: "Do you think the shape of something matters for floating or sinking?" Help them connect their observations to the idea of floating and sinking.

 **Done when:** Student can describe their observations and begins to connect them to the idea of floating/sinking.



4 **Activity** 9 Min

1. Encourage the child to design and build their own boat using the aluminum foil. The goal is to make a boat that can hold as many small objects as possible without sinking. Guide them to experiment with different shapes, reminding them that scientists learn from designs that don't work the first time. Ask: "What kind of shape do you think would be best for holding lots of treasures?" or "What if we made the sides taller or wider?" Once they have a boat, have them place it in the water and carefully add small objects one by one until it sinks. Ensure the play area is safe for water. `Buoyancy` is the upward force from the water that makes things float; a good boat has good buoyancy!

 **Done when:** Student has built at least one foil boat and tested its ability to float with objects.



5 Summary 2 Min

1. Celebrate the child's efforts and discoveries in building and testing their boats. Ask them to reflect on their learning. Ask: "What was the most surprising thing you learned about floating and sinking today?" or "If you were to build another boat, what would you do differently?" Help them connect their exploration of `buoyancy` to the real world. Ask: "Why do you think a giant cargo ship can float, even though it's so heavy?" This reinforces that the same science applies to big ships and their foil boats.



Done when: Student shares one key takeaway.

Beyond The Lesson

Fuel their curiosity beyond the lesson with bonus sparks.



Table Talk

Understanding buoyancy helps engineers design everything from giant cargo ships to tiny submarines.



Did You Know?

Everyday objects can reveal surprising science when we slow down and observe them.



Challenge

Try to build a boat that can hold 10 objects, then 20! Or try to make a small pebble float by building a tiny boat just for it.

Quick Recap Quiz 4 Min

Check what your young scientist remembers. Each question includes a Parent Tip to help them find the answer without giving it away.

1. What Helps A Big Boat Float On Water?



Being very heavy



Pushing water out of the way



Remind them of the discussion about how the boat's shape makes space for water.

2. If You Have A Flat Piece Of Foil, What Happens If You Crumple It Into A Tight Ball And Put It In Water?

 It floats better

 **It sinks**

 Ask them to remember their initial experiment with flat foil vs. shaped foil. What takes up more space?

3. Your Boat Sinks With One Pebble. What Could You Try To Make It Float With More Pebbles?

 Make the boat smaller

 **Make the boat wider or taller**

 Prompt them to think about how they designed their successful boats. What shapes held more?

4. Why Does A Rubber Duck Float In The Bathtub?

 It's heavier than water

 **Its shape and the air inside help it push water away**

 Relate it back to their foil boats – how did they make space for the water?