

## LEARNING TASK

# BOATS THAT FLOAT!

5-24-21 • Length of Session: 1 Hour

Description	In this fun hands-on activity participants will design and test boats made out of squares of tin foil. This hands-on activity involves engineering, investigation, observation and problem solving.
Connections to Conference Theme (Professional Noticing, Play, Finger Use, etc.)	Professional Noticing, Play, Children's Math and Science, Culturally Relevant Pedagogy
Content (knowledge, skills, & attitudes)	<p><b>Knowledge:</b> Participants will build their engineering and problem solving skills through playful experiences building boats using items they can find around their home.</p> <p><b>Skills:</b> Gathering new ideas to provide children new experiences as engineers, investigators, observers and problem solvers.</p> <p><b>Attitudes:</b> We are all engineers and problem solvers!</p>
Achievement Based Objective (so that ...) from 8-step design	So that... Participants can train others to create playful, culturally relevant experiences for young learners to foster a lens of problem solving.

Time	Identify your A:	Activity Description	Materials/Handouts/Resources
5 min	Anchor	<p><b>Slides 1-2</b> Connecting and Checking in</p> <ul style="list-style-type: none"> <li>• Time for gathering material</li> </ul>	<p><b>CoP 4 bag:</b> Pieces of square tin foil, marbles, plus a medium size bowl or tub filled with water and other small objects such as coins, paper clips, small plastic toys that you want to try out your boat.</p>
2 min	Add	<p><b>Slides 3:</b> Introduce elements of STEAM:</p> <ul style="list-style-type: none"> <li>• Science</li> <li>• Technology</li> <li>• Engineering</li> <li>• Art</li> <li>• Mathematics</li> </ul> <p>Question to keep in mind as we go through the activity;</p> <ul style="list-style-type: none"> <li>• What elements of STEAM surface during this activity? Where is the STEAM?</li> </ul>	
5 min	Add	<p><b>Slides 4-6:</b></p> <ul style="list-style-type: none"> <li>• <b>Slide 4</b> - There are all kinds of different types of boats with different designs for different purposes.</li> <li>• <b>Slide 5</b> - Some boats are designed for different types of cargo (people, goods).</li> <li>• <b>Slide 6</b> - Some boats are designed based on the material people have access to (canoe made out of reeds, canoe made out of concrete by engineering students at Fresno State).</li> </ul> <p>What are some other types of boats you have seen? Please share in the chat.</p>	

20 min	Apply	<p><b>Slide 7:</b></p> <ul style="list-style-type: none"> <li>● 1st Design Challenge: Design a boat that will float and hold objects</li> <li>● Switch to Webcam <ul style="list-style-type: none"> <li>○ Participants explore with you, see if each item you have will sink or float when you put it in the water. Make predictions before.</li> <li>○ Build a boat out of a tin foil square, and test it in the water.</li> <li>○ See how many objects it will hold</li> </ul> </li> </ul> <p><b>Slide 8: (can switch and show or just verbalize)</b></p> <ul style="list-style-type: none"> <li>● 2nd Design Challenge: Build a boat that will hold more objects than your first boat.</li> <li>● Set timer - for 5 minutes, let participants explore, You can continue exploring with boat designs and testing with objects</li> <li>● After 5 min. Check in: <ul style="list-style-type: none"> <li>○ How did your 2nd attempt go?</li> <li>○ What were some adjustments you made and why?</li> </ul> </li> </ul>	<p><b>Material:</b></p> <ul style="list-style-type: none"> <li>● Pieces of square tin foil</li> <li>● medium size bowl or tub filled with water</li> <li>● small objects such as coins, paper clips, small plastic toys that you want to try out your boat.</li> </ul>
10 min	Add	<p><b>Slide 10 - 11:</b></p> <ul style="list-style-type: none"> <li>● <b>Slide 10:</b> Unique boats - Chinese Junk boat and FLIP research boat</li> <li>● <b>Slide 11:</b> More information on FLIP boat</li> </ul>	

5 min	Add	<p><b>Slide 12-13: Resources and Next Steps</b>  Children's Literature as a way to spark interest in building boats and things that float!</p> <ul style="list-style-type: none"> <li>● <b>Who Sank the Boat?</b> - by Pamela Allen <ul style="list-style-type: none"> <li>○ How many animals will fit in the boat?</li> </ul> </li> <li>● <b>What Floats in a Moat?</b> - by Lynne Barry <ul style="list-style-type: none"> <li>○ What will the animals use to make a boat to float across the moat?</li> </ul> </li> <li>● In our <b>one page activity</b> guide we have links to these two book titles with more information on activities for young children from the CA Early Math Project.</li> <li>● Be Creative! Show pictures of other materials to build boats</li> </ul>	<p><b>Handout:</b>  Boats that Float Activity Guide</p> <p><b>Resources:</b>  <a href="#"><u>Who Sank the Boat?</u></a>  <a href="#"><u>What Float in a Moat?</u></a></p>
10 min	Apply	<p><b>Slide 14:</b></p> <ul style="list-style-type: none"> <li>● Design Challenge 3 - <ul style="list-style-type: none"> <li>○ Find 2 more items you want to test to see if they sink or float,</li> <li>○ Can you find another item you could use to build a boat?</li> </ul> </li> <li>● Set a timer for 5 minutes, when time is up have participants unmute and share or share in chat.</li> </ul>	<p><b>Material:</b> Objects you find in your home</p>
5 min	Away	<p><b>Slide 15-16:</b></p> <ul style="list-style-type: none"> <li>● Slide 15: Where is the STEAM? Revisit this slide, ask the participants to share where they saw elements of STEAM in this activity.</li> <li>● How would I share this activity with others? What adjustments would I make?</li> <li>● Slide 16: One page activity guide</li> </ul>	

# AIMS PROFESSIONAL LEARNING GUIDE

Across all of our offerings, whether in-person or online,  
AIMS professional learning strives to support educators in:

- 1 Cultivating inclusive, accessible environments that welcome all learners to expand their creative thinking skills through exploration, play, and problem-solving.
- 2 Utilizing common everyday materials as innovative tools for learners to construct new ideas and communicate their understanding.
- 3 Designing playful, engaging activities that are rich in content and culturally relevant to elicit and promote student thinking.
- 4 Noticing and building on children's ideas through intentional, responsive teaching practices.
- 5 Fostering the intrinsically-motivated process of learning through meaningful life-long, life-wide, and life-deep experiences.