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Balloon Boat Races

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Submitted by: Natalie Wilson

Name of activity: Balloon Boat Race

Age/Grade range: Unknown

STEM discipline(s): engineering, design, physics

What topic does this activity relate to? Buoyancy and density

Pre-activity / Pre-work (what students should know or prepare before doing engaging in this activity; what teachers need to prepare before leading the activity)**:**
The students should understand the basic principles of buoyancy, i.e. that things will float when they are lighter than water. Examples of real life boats and how they are able to float when they are heavy would be beneficial. Additionally, showing them multiple basic designs of boats could help the designing and building process go by faster.

What should the students learn by the end of this activity?
Students should take away the basic principles of buoyancy from the pre-activity lesson and from the hands-on work they do with the mini boats.

Tools/supplies needed (indicate quantity and if it needs to be bought + price range):
Baby pool or similar sized body of water to race the boats
All materials unknown materials for boat
Tape
balloons

Total price (indicate per class or per student):

Step-by-step instructions on how to conduct the activity (attach link if found online and make note of modifications for your class here): (Include e.g., size of groups, images of materials or people doing the activity that might help the reader lead the activity, helpful supporting materials)
https://www.thetech.org/sites/default/files/pdfs/Design-Challenge-Learning-Lessons/Float_a_Boat.pdf
http://girlstart.org/wp-content/uploads/2017/09/9.BalloonBoats.pdf

Week 1

1. Begin the lesson about buoyancy and how things can stay afloat in water
2. Have the students plan what their boat will look like with their given knowledge of buoyancy.
3. After the planning is approved by the teacher (to be sure supplies won't be wasted), the students may begin by constructing the boats

Week 2

1. If needed, provide extra time for the boats to be constructed
2. Begin placing the boats in the kiddie pools and have them compete to see whos boat reaches the end of the pool first.

During activity:

Number of students present:
20 (broken up into groups in order to maximize time and supplies)

What modifications had to be made to the lesson plans and why (if any)?
Dissolving water, sugar, or anything else that is water soluble into the water for the boats could teach the children how to manipulate water's buoyancy.

Provide feedback: teacher observations, specific student feedback, work products:
While doing the race, there must be ample space (preferably outside) to place the kiddie pool. The Weehawken club performed theirs outside, but had to carry all of the water from sinks inside because there were no available water hoses.

Post-activity (reflection):

What aspects of the activity worked well?

What can be improved on?

What suggestions do you have to adjust the lesson for different purposes or populations?

If money was spent on tools/supplies, in your opinion, was the investment worth it?

Provide thoughts on alternative materials, steps or other modifications that might be worthwhile for others to consider.

Additional notes: