

Wind Cars

Introduction:

Students design and construct small, wind-powered sail cars using limited quantities of drinking straws, masking tape, paper and beads. Students could even compete to see which sail car travels the farthest when pushed by the wind. We recommend having students work on the sail cars in partnerships. Using a fan you will test out the cars that are created and give students an opportunity to change their sail to engineer a better design.

The activity itself will create a process that is challenging. The students will be relying on a partner for help, but they will also have moments of frustration. Some will use positive self-talk to push through and you can use all of this later on in the lesson when teaching the motivation formula.

Details:



Space:
Moderate space



Activity Type:
Movement/group



Grades:
2-12



Group Size:
10 or more



Time:
15-20 minutes

Materials:

- Disposable plastic drinking straws without bends or long brown sticks to build the car frame. You may find a different resource that works. Just make sure it fits within the beads you have chosen.
- 4 wooden beads for the sail car wheels. There are many different sizes with different size openings. Make sure whatever straws, sticks or dowels you have chosen fit with the beads you have chosen.
- Link with more details provided on this lesson's webpage.

Activity Instructions:

Important Note: It is imperative that you understand how to build the car and should try it out first. You will want to have one as a model as well as be prepared to build another simultaneously with your students. The mentioned site has a video you will use with your students and will also demonstrate for you how to build the car.

Activity Instructions (Continued):

Begin by showing a video of a wind powered car found at the same site listed above. You could also simply bring your own constructed car as a model. Explain that we will be creating these cars today and even competing to see which one travels the farthest. Explain that the design of the car will be almost identical, except for the sail which can have differing shapes based on what your partnership creates.

Put your students in partnerships and distribute materials. Each group needs approximately: 6-10 straws, 4 macramé beads, 1 sheet of paper, 40 cm of masking tape and a pair of scissors. You will want to demonstrate how to create the car and have your students follow along as you create one as a demonstration. Once students have created the structure of the car, including the frame and the wheels, then you will demonstrate the sail portion and give them time to discuss, create and build the sail. As partnerships finish their car, be prepared to use a fan to test them out and give them opportunity to make changes.

You may also want to have a certain amount of time designated as 'testing time' during which all of this happens including trial and error. You can establish you will have a competition once that time is up. Don't forget to validate all partnerships for the effort.

Processing the Experience:

- What did you like about this activity?
- What made it a challenge?
- What is a challenge?
- What helped you get through the challenge and finish making your car?
- What pushed the car forward?
- How did the sail affect how far your car traveled
- Were some sails more effective than others?
- What would you do differently if we were to do this again?