



Designing a Wind Powered Boat

Purpose:

- To become familiar with an activity in *The Power of the Wind* curriculum.
- To identify different ways to approach leading an activity.

Time: 45 minutes

Materials:

Flip chart with the following:
Design and build a “sailboat” that will travel in a straight line a minimum of 75 cm on a smooth surface.¹ Your “constraints” are to use a Styrofoam tray for the body and to attach a mast with a sail to the tray.

Small styrofoam tray, flexible straws, cardboard or index cards, tape, straight pins, scissors, tape measure, box fan, flip chart with activity directions on (see bolded statement below). Optional: pencils, stop watch with second hand, string, paper cups, paper clips, pennies, miscellaneous hardware and office supplies.

¹ Sebestick, J. (2008). *The Power of the Wind* Youth Guide. University of Illinois. P 6.

Trainer Notes:

STEP 1: Context and Instructions

Let’s get going and dig into the curriculum! In this training segment you will first be a “learner” and do an activity from the youth guide on designing boats. After you have completed the activity, I will ask you to take off your “learner hat” and put on your “leader” or “facilitator hat.” We will then spend some time debriefing the activity.

Refer to flip chart with instructions for this activity.

STEP 2: Activity and Discussion

We are going to work on designing a wind powered boat. The challenge is a design problem. In this activity, you will build your own sailboat and test it to see how far and straight it goes when you use a fan as the source of wind. Feel free to test, adjust your designs, and test again.

Please work with a partner to complete this activity. You will have about 20 minutes to complete this activity. Materials are located _____ **(tell participants where materials are located)**.

As participants are doing the activity, move around the room and check in with groups to identify progress and challenges they are having. The activity can take about 20 minutes after participants begin; however, if the majority of participants are done early or need extra time, the length of time





spent on the activity can be adjusted. Notify participants when they have 5 minutes left. This cue will help them wrap up the activity.

Now let's discuss your designs and models. Let's do a "show and tell" and highlight your designs.

Have participants walk to each group as they give a short overview of their boat. When the overview is completed, ask the group selected questions from below. Do this for each group after they highlight their design.

Questions to ask groups as they discuss their design:

- How far did the sailboat travel? How does the wind move a sailboat?
- What was something you learned by building this sailboat?²
- Where else in your life do you see wind used to move things?
- How might you use what you just learned in other designs?

STEP 3: Review as Facilitators

Now let's break this apart as facilitators that would be leading this activity ourselves.

Please open your *The Power of the Wind* curriculum to pages six and seven.

Give them some time just to familiarize themselves with the page and read the different sections.

Notice the piece of the activity you just did "How Can We Design a Wind Powered Boat?" Let's review the setup of each lesson. Can someone point out the key pieces or headers for this lesson?

Have participants share the specific sections below.

- *The "Design and Build" section gives you the challenge or task that needs to be completed.*
- *The "Try It" section gives you ideas and specific directions of HOW to complete the task.*
- *The side bar on page six lists the materials you need.*

² Sebestick, J. (2008). *The Power of the Wind* Youth Guide. University of Illinois. P.7.





- *The “In your Engineering Notebook” section lists a series of questions that you can think about, talk about, and answer as you are doing the activity, as well as after you have completed the activity.*
- *The side bars on page seven provide content information about wind that might be helpful in completing the activity.*

There are a lot of great ideas in the youth and facilitator guides. This training is designed to deepen your learning of these great resources and how you might use these and other ideas while you implement.

- What similarities and differences did you notice in how you completed the activity versus what the guide says?
- What did you just learn about how this activity is done by doing it?
- How will this help you implement?
- Based on the activity you did, what challenges do you anticipate with leading this activity?

Please turn to the Facilitator’s Guide on pages six and seven. Take a couple of minutes to read through the facilitators tips for this activity.

- Can you identify how I, as the facilitator, used these tips in facilitating the lesson?
- What additional helpful hints do you see in the Facilitator’s Guide for this activity that you will want to use as a facilitator?
- What SET Abilities were you intentionally working on as you completed this activity?

STEP 4: Transition

In the next section, we will be learning more about the Experiential Learning Cycle. You have been experiencing this since you walked in the door, but now we are going to look at its parts and think about your role as facilitator in using this technique.

