Nasco Education™

LESSON PLAN

Science/ SEL

Developed with Linda Roberts

Volume 16 | Gr. 4–8

How long can you hold your breath?

Objectives

Students will...

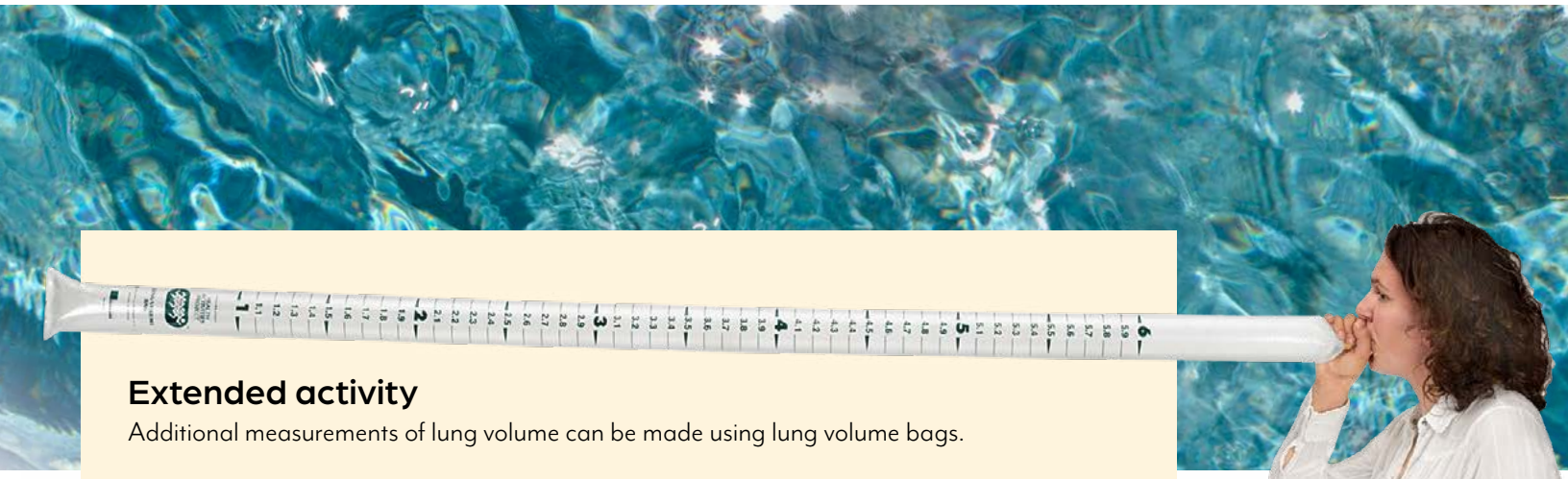
- Develop an understanding of "trial and error" methods used in scientific research
- Understand the basic workings of the respiratory system and how it relates to the rest of the body

Materials list

- Stopwatch (**TB14784**) or a clock with a second hand
- Tape measure (**TB15105**)
- Graph paper, pad of 50 sheets (**9706099**)
- Pencil (**9728094** or **9727070**)
- Notebook (**TB26495**)

Activity

- Have students work with a partner. They should measure each other's height without shoes and record in their notebook.
- Next, one partner uses the timer while the other holds their breath. Students should time this three times and record the results in their notebook. Have them find the average time, then switch roles to record data for the other person.
- When the partners have each had three trials, they should collect data from the other groups.
- Using the data they collected, have students make a graph to show the relationship of height to length of time breath was held.



Extended activity

Additional measurements of lung volume can be made using lung volume bags.

Lung Volume Bag Kit

Measure lung capacity with this durable, silk-screened plastic bag, calibrated to six liters, with accompanying mouthpiece and holder. Shows the relationship of body size to lung volume. Contains four lung bags, four mouth pieces, four mouth piece holders, and four rubber bands. Instructions included.

SB06915

Disposable Lung Mouth Tubes. Pkg. of 100.
SB15812

Lung Volume Bags.
Pkg. of 4.
SB51112

Mouthpiece Holders.
Pkg. of 4.
SB51113

SEL Power-Up Reflection

Suggested questions for an SEL-focused discussion after the activities.

GROUP REFLECTION

1. Why do you think it was important to work with someone else for this project?
2. How did your numbers compare to other people's measurements?
3. Is there a relationship between height and the length of time breath was held?
4. What are some methods you can use to get more air into your lungs? In what situations might holding your breath be helpful?
5. What are some factors that would reduce the amount of time breath can be held?
6. Were any of your numbers really different from the others? If so, why?
7. What does having to repeat the project multiple times show us?
8. Should you test your instincts like holding your breath outside of a classroom/medical experiment?
9. What dangers are there in trying to override your instincts?

SELF-REFLECTION

1. Did I try my best on this project? If you had to give yourself a score from 1-10, with 10 being "I did my best work" and 1 being "I didn't put any effort in my work," what score would you give yourself?
2. How did I feel as I worked on this project?
3. What role does science play in my life?