

Grade: 6

Title: Where Has the Time Gone?

Standards:

6.1.2 Give examples of different ways scientists investigate natural phenomena and identify processes all scientists use, such as collecting relevant evidence, the use of logical reasoning, and the application of imagination in devising hypotheses and explanations in order to make sense of the evidence.

6.1.3 Recognize and explain that hypotheses are valuable, even if they turn out not to be true, if they lead to fruitful investigations.

6.2.5 Organize information in simple tables and graphs and identify relationships they reveal. Use tables and graphs as examples of evidence for explanations when writing essays or writing about lab work, fieldwork, etc.

Objectives:

Students will be able to brainstorm their ideas and questions about time.

Students will investigate their sense of time by estimating the duration of one minute.

Materials:

(Teacher)

1 clock with a sweep second hand

Several sheets of newsprint and marker(s)

(Students)

Notebooks

Pencils

Preparation for Lesson:

1. Prepare several sheets of newsprint with the headings “What We Know about Measuring Time” and “Questions We Have about Measuring Time” for the class brainstorming session.
2. Arrange the classroom so that you are the only one who can see a clock or watch with a sweep second hand.
3. Decide which pairs of students will work together in this lesson.

Procedure:

1. Ask students to imagine how their school day would be different if clocks and calendars didn't exist. Make a list of their ideas.

2. Ask students to record in their science notebooks their ideas about the following question: How do you think you would tell time if you didn't have a clock or watch? Make sure you have students record their information in their notebooks.
3. Ask students to help you make lists on the "What We Know about Measuring Time" and the "Questions We Have about Measuring Time" on the sheets already prepared earlier.
4. Ask students to estimate the duration of a minute. Tell them that you would like them to try measuring time without using a clock or watch.
5. Pair students, and designate one partner as the "predictor" and the other as the "recorder."
6. Show all the students the hand signal you will use to communicate the time. You may want to use a palm down for "early" (before one minute), a thumb up for "on time" (within three to five seconds of one minute), and a palm up (with a shrug) for "after" (later than one minute).
7. Tell students that you will signal the beginning of the minute-long interval with a wave of your hand. Ask the predictors to put their heads on their desk and cover their eyes. Ask them to raise their hands when they think a minute has passed. Ask the recorders to watch for your signals and to record whether their partners' predictions are early, nearly on time, or late.
8. Tally on the chalkboard the number of predictions that were early, on time (within three to five seconds), and late. Then have students switch roles so that everyone has an opportunity to be a predictor.
9. Again, tally the number of predictions that were early, on time, and late.
10. Discuss with students the strategies that they used to estimate a minute. Questions such as the following may help get the discussion started:
 - What were some of the ways you tried to make your estimate accurate?
 - How do you think you could improve your estimate?

Assessment:

1. Have students repeat the predict-and-record tests, encouraging students to try a new strategy to improve their estimates. Again, tally the predictions.
2. The brainstorming session could be used as an assessment. This assessment provided information about what the students already know about telling time.
3. As another assessment students could respond to the question "How do you think you would tell time if you didn't have a clock or a watch?"

Adapted from Measuring Time Lesson 1 pp. 13-18 STC Science Kit