

Lesson 1 -
Discrete and Continuous Data
(est.25 min.)

Objective

Students will be able to explain the difference between discrete vs. continuous data.

Background

How we collect and use information is changing. Stockbrokers used to watch a tickertape that brought stock prices around every half-hour or so. Doctors used to monitor the critically ill minute by minute. And meteorologists would study day-old weather maps to predict storms such as hurricanes or tornados. Today each of these professionals uses information that's no more than a few seconds old. Times have changed. These days, REAL TIME rules!

On the Internet, "real time" doesn't always mean data available the moment they are collected. Rather, real-time data are updated on a regular basis and frequently changes. For example, weather satellite images updated every hour are still referred to "real-time data." At first, the distinction among real-time data, near-real-time data and archived data may not be clear. However, as you continue to explore these resources, this difference will become easier to see.

So what are the advantages of using real-time data in the classroom? Research has shown there are measurable advantages. Beyond the dramatic National Assessment of Educational Progress (NAEP) Science findings of 2000, which revealed a statistically significant increase in scores of those students who downloaded and analyzed data, there also exists compelling evidence that this approach to science instruction improves standardized test scores (National Center for Education Statistics, 2001). Furthermore, in a review of studies on problem solving, it was concluded good problem solvers work harder than poor problem solvers. Most studies of thinking find that problem solvers need to be conscious of their own reasoning processes by talking or writing down their thoughts (Lockhead 1981).

While there are many exciting and stimulating real-time data Web sites available for classroom use, these resources should NOT replace opportunities for students to collect data themselves through hands-on experimentation. The use of real-time data should enhance how and what students learn. It's important to stay aware of this issue and make careful decisions about when to use real-time data to

enhance the curriculum.

The purpose of this activity is to help you explain to your students the difference between discrete (snapshots) and continuous and real-time data. This activity will take approximately 15-25 minutes to do with your students.

Materials

Computers with Internet access.
Projector (optional)
Student hand-outs

Procedure

1. Access the COOL Classroom Web site at http://www.coolclassroom.org/cool_projects/lessons/miniunits/lesson1.html
2. Take a look at the series of photographs and attempt to determine what has happened based on the information available to you.
3. Have students complete student worksheet.
4. Discuss results with the class.



1. Write a description (frame by frame) of what you think the girl in the pictures is doing:

2. Watch the video clip and write a description of what the girl actually did:

3. Does the story you deduced from the still photographs match what happened in the video?

4. Which method gave you more information about what she was doing?
(circle one)

- A. Photographs B. Video

Scientists attempt to interpret events and processes that occur in the ocean based on the data available to them. The more data that can be collected to fill in the unknown gaps, the more accurately scientists can interpret the hidden world of the ocean.

Worksheet:
Discrete and
Continuous Data

