Help students understand slope and graphs with free SmartGraphs software

NCTM Session 476
Friday, April 19, 2013
Denver, Colorado

Andy Zucker (azucker@concord.org, 978-405-3231)
Carolyn Staudt (cstaudt@concord.org, 978-405-3215)
The Concord Consortium
25 Love Lane
Concord, MA 01742

To create a tri-fold paper brochure about SmartGraphs, print the next two pages back-to-back on a single sheet, and fold it in thirds. These pages include URLs where you can obtain and use free activities, and even create your own activities for students.

95% of the time teachers use a SmartGraphs activity they report they would use it again!

Activities work on any computer. There is nothing to download or install.

Use SmartGraphs in your science, math or social science class.

"I like how students were able to predict [by drawing] and then analyze their data."

"...the visual component was vital as students were able to see the graph change in relationship to their movement."

"The directions were very clear. Students had no problems navigating through the activity."

-Teachers using SmartGraphs

Supported by Research

In a randomized trial with nearly 2,000 students, those who used SmartGraphs activities showed greater learning gains than students in the control group, who studied the same topics from the same textbooks.

Results were confirmed in the second year of the study. In both years, SmartGraphs activities were used four or five times, to supplement regular instruction. Teachers used activities with a whole class, in small groups or on students' individual computers.

The Concord Consortium is a nonprofit research and development organization dedicated to transforming education through technology. Our deeply digital tools and learning activities capture the power of curiosity and create revolutionary new approaches to science, math and engineering education.

The Concord Consortium

Revolutionary digital learning for science, math and engineering

concord.org

SmartGraphs

Free web-based activities that help students understand graphs

The Concord Consortium

Revolutionary digital learning for science, math and engineering

Activities

The list of available activities keeps growing, and they focus on:

- The motion of objects
- Slope as a representation of speed
- Atmospheric CO_2 and global warming
- Half-life of radioactive substances
- Phase change of materials
- Algebra, including linear functions
- College loans

A form-based authoring system allows non-programmers to revise existing activities or create and share new ones.

Want to Create Your Own SmartGraphs Activities?

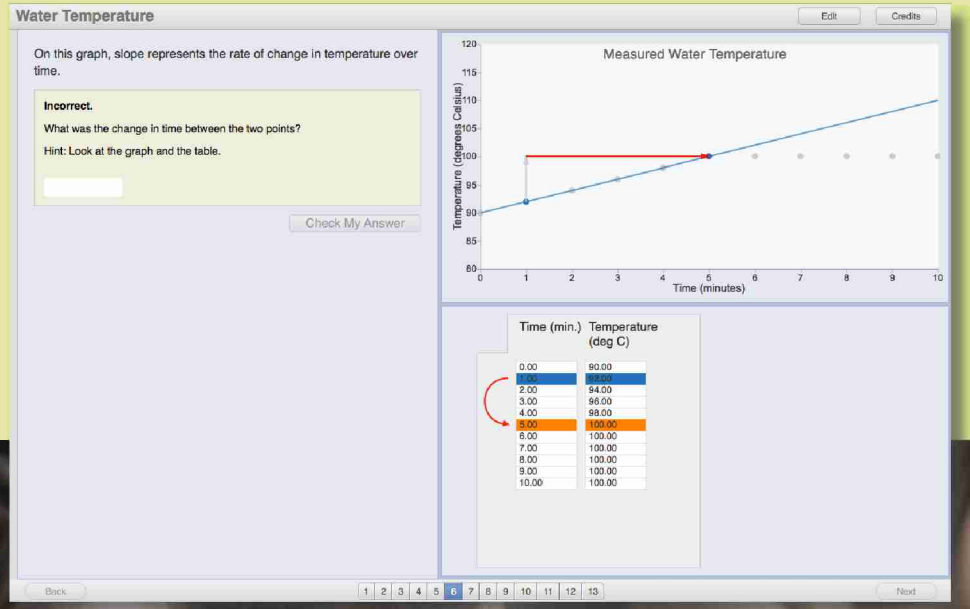
Register as an Author »

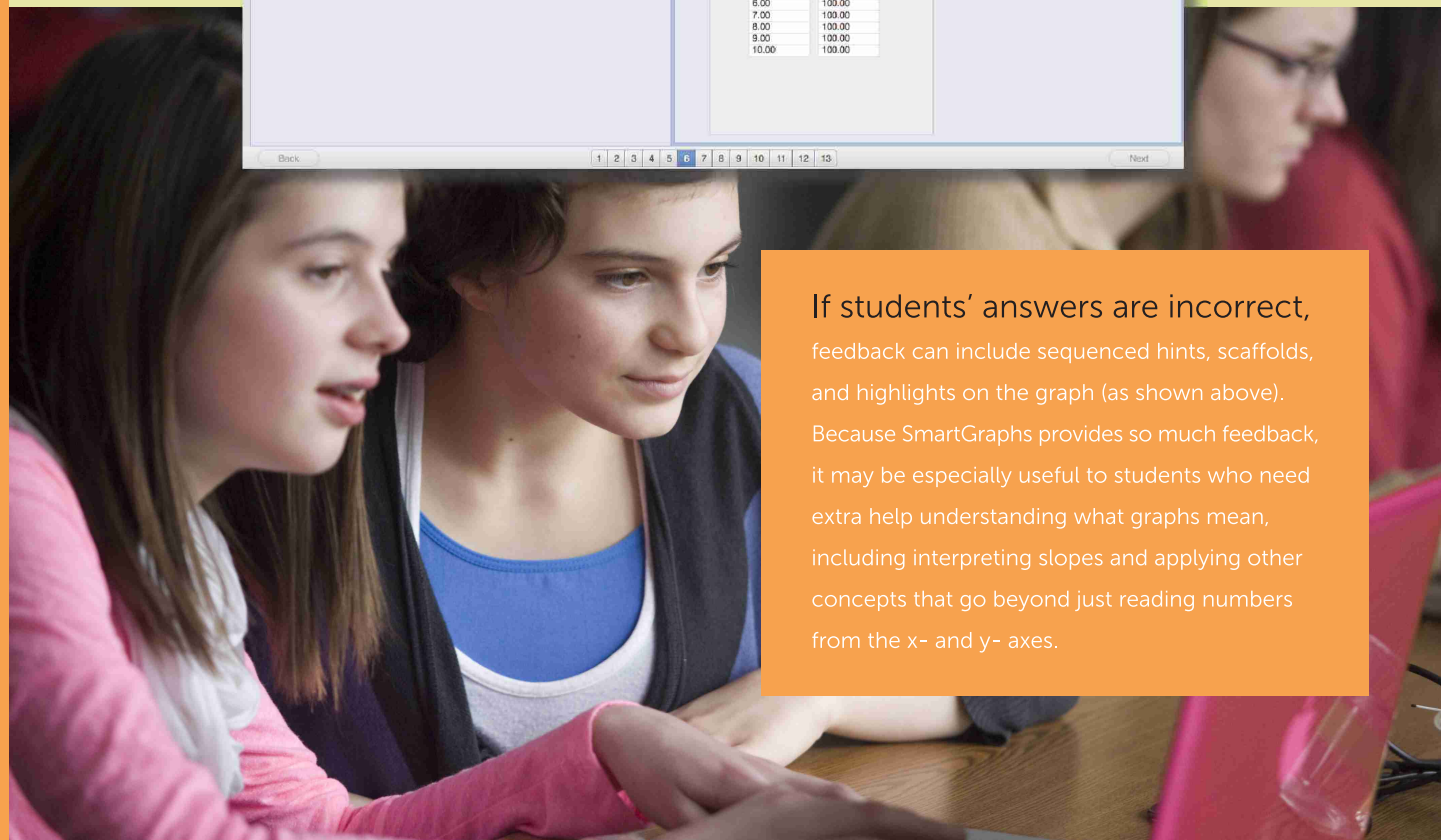
Activities consist of multiple pages, and include graphs, tables, animations, text, images and more.

Learn more and find activities
http://smartgraphs.org

Create your own activities
http://smartgraphs-authoring.concord.org

Students interact by clicking points on a graph, drawing a prediction graph, using a motion sensor (optional), answering multiple-choice or constructed response questions, providing numeric answers, constructing linear functions that meet certain criteria, labeling points on the graph and more.





If students' answers are incorrect, feedback can include sequenced hints, scaffolds, and highlights on the graph (as shown above). Because SmartGraphs provides so much feedback, it may be especially useful to students who need extra help understanding what graphs mean, including interpreting slopes and applying other concepts that go beyond just reading numbers from the x- and y- axes.