

"Equal"-ilibrium?

Summary

Students read an article and answer questions about dynamic equilibrium. Then they perform an activity to demonstrate a dynamic equilibrium where the "reactants" and "products" are not equal at equilibrium, and construct a graph to demonstrate their data.

Time Frame

1 class periods of 60 minutes each

Group Size

Pairs

Materials

- [student worksheet](#)

(attached)

class set of "What's So Equal About Equilibrium?" article (by Michael Tinnesand, ChemMatters, September 2005, pgs 11-13, available through the American Chemical Society website)

per student pair:

2 10-mL graduated cylinders

1 large straw

one coffee-stirrer-type straw

1 dropper

water

Background for Teachers

This reading is taken from and the activity is modified from the teacher pages associated with the reading on the American Chemical Society website, www.acs.org.

Student Prior Knowledge

Students should know how to construct a graph; no prior chemistry-specific knowledge necessary.

Instructional Procedures

Before class, prepare a class set of the reading, and photocopy one student page for each student.

Set out materials.

Begin the activity with the reading as an introduction to the topic. As students complete the reading and questions, they may move on to the activity.

Have students complete the activity, but check with you prior to dumping out their water. You should check their results briefly to see if they appear to have reached equilibrium. The volumes in cylinders A and B should be more or less stable, although they should NOT be equal to each other. (Most students try to stop the activity when the cylinders reach equal volume and have to be told to keep going.)

Have students return to their seats to construct a graph and answer the questions at the end of the student sheet. Discuss the questions to address misconceptions and give them a better chance of answering #5 correctly. At the end, students are VERY clear that "equilibrium" doesn't mean equal amounts, but equal rates of transfer.

Bibliography

Lesson Design by Jordan School District Teachers and Staff.

Authors

[Utah LessonPlans](#)