

High School Chemistry

Activities Based Curriculum

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Overview of Presentation

- POGIL Activity
 - ◆ Process Oriented Guided Inquiry Learning
- LONCAPA Activity
 - ◆ Learning Online with Computer-Assisted Personalized Approach
- iClicker Activity
 - ◆ audience response system

POGIL

- Students are able to able to learn big ideas through inquiry.
- Advantages
 - ◆ Students learn to become independent learners
 - ◆ Students are able to learn from each other
 - ◆ Students are able to prepare for the ACT

Access to POGIL Problems

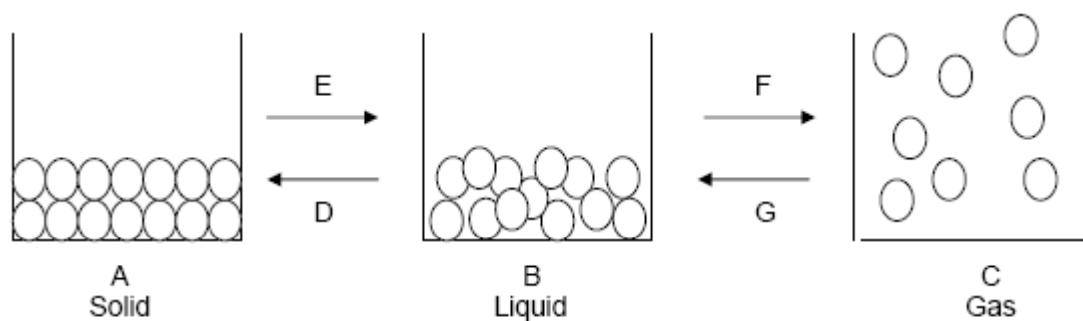
- Visit the POGIL website home page:
 - ◆ <http://new.pogil.org>
- This website provides free access to curriculum materials for a number of chemistry subjects and levels.
 - ◆ For high school chemistry problems browse from the home page to
 - curriculum materials=>high school=>POGIL Activities for High School Chemistry
- Registration simply requires an email address.

Example of a POGIL Problem

- Phase Changes
 - ◆ Problem provides motivation of why it is important to learn the concept.
 - ◆ Clear objectives are stated.
 - ◆ New Concepts are pointed out.
 - ◆ Prerequisites are listed.
 - ◆ Required vocabulary is provided.
 - ◆ Success is measured when students can construct their own curves.

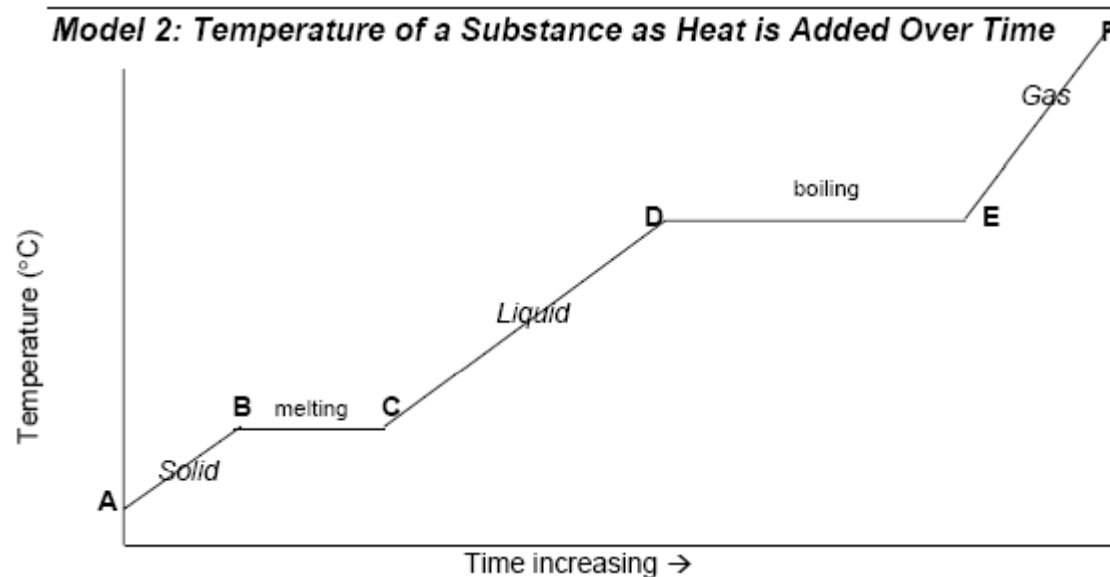
POGIL Example Continued

Model 1: Representations of Molecules in Three Phases



Students use this model to describe energy flow, the endothermic and exothermic process for phase changes and differentiating between the surroundings versus the system.

POGIL Example Continued



This model provided students a chance to become familiar with the heating curve of water by describing its main components and the process. The problem concludes with students creating their own curve for a mythical substance.

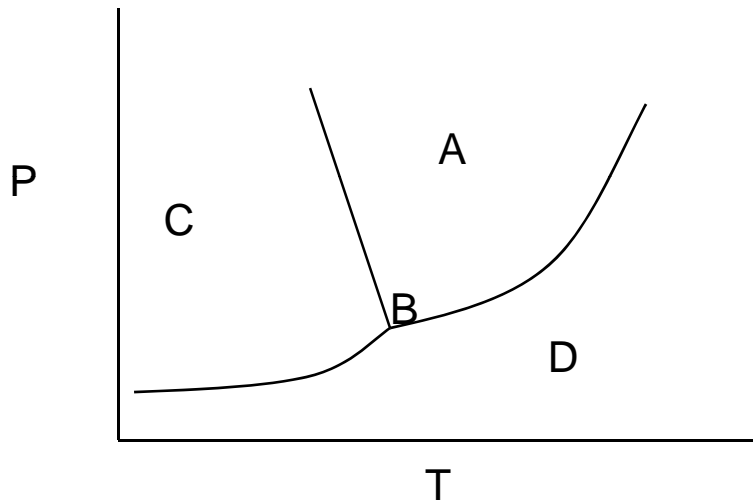
LON-CAPA

- Information can be found on the LON-CAPA website:
 - ◆ www.lon-capa.org
- This system provides a unique problem set for each student in the class.
- The teacher specifies an open and close date for a problem set, which signals the system when to grade the students work.
- System relies heavily on teacher training and upfront loading of assignments.

LON-CAPA Training

- We recommend attending the one week training summer at MSU to learning how to build a class, select problems from the system and write new problems.
- For additional information, you can contact Felicia Berryman at MSU
 - ◆ Felicia@msu.edu
 - ◆ 517-432-4040

Sample LON-CAPA Problem



Match the following:

- solid
- gas
- liquid
- triple point

This is an example of a descriptive science question.

Sample LON-CAPA Problem

Calculate the molarity of the solution that contains 19.1 g of Na_2SO_4 in 196 mL of solution.

Submit Answer

Tries 0/5

This is an example of a math problem. Significant figures as well as the answer can be controlled.

iClickers Information

Audience response system

- The vendors website is:
 - ◆ www.iclickers.com
- Call 888-938-8881 for pricing information

iClickers Demo Questions

Question #1

- Today's date is:
 - A. March 16, 2009
 - B. Monday
 - C. St. Parick's Day Eve
 - D. March 16, 2008

iClickers Demo Questions

Question #2

- The phase change of water from a solid to a liquid:
 - A. is Endothermic.
 - B. is an example of melting.
 - C. has a zero slope on the heating curve.
 - D. is all of the above.

iClickers Demo Questions

Question #3

- I think the most useful information in this presentation:
 - A. was the LON-CAPA overview
 - B. was the POGIL problems overview
 - C. Both A and B
 - D. I already knew about LON-CAPA and POGIL.

Summary

These activities provide students an opportunity to learn to become a life long learner of science by working in teams and using the internet to find answers to difficult science questions. In addition, the iClickers provide the students and the teacher with instantaneous feedback on gaps that exist individually and as a class.

Please let us know if you have questions.