



PI/PD Leader Institute

SMT Instructional and Professional Development Resources

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The Concord Consortium

November, 2005

PI/PD Leaders Institute

Slide 1

These slides supported a workshop at the PI/PD Leaders Institute Nov 5, 2005 in Washington DC, organized by AIR. For more information, see <http://concord.org>



The Concord Consortium

- Nonprofit, dedicated to improving STEM education through technology
- Created the first online TPD Web-based courses
- Created probeware, Dragon Genetics, network science.
- Created the Virtual High School
 - *171 online high school courses*
 - *A low-cost cooperative*
 - <http://govhs.org>

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Slide 2



Five Examples

- A sample of hundreds of activities
- Interactive, with lessons
- Free open source
- NSF and DoEd supported
- Tested in real classrooms
- Available at

<http://concord.org>

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Slide 3

The primary part of the workshop was to use five sample learning activities based on free software created at the Concord Consortium. Each of these activities was drawn from a collection of several hundred that are available from our website. These five activities are highlighted in our winter newsletter @Concord, which also contains a CD that contains all the software demonstrated. For a free copy, contact cynthia@concord.org



The Examples

- The Broken Calculator
 - From Seeing Math Elementary
- The Qualitative Grapher
 - From Seeing Math Secondary
- Sound Grapher
 - From a probeware project TEEMSS
- Population Explorer
 - From Modeling Across the Curriculum
- Self Assembly
 - From the Molecular Workbench

November, 2005

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Slide 4

The Broken Calculator is an activity that encourages students to think more deeply about basic computational algorithms. We use it as part of our teacher professional development courses called Seeing Math Elementary.

The Qualitative Grapher is a graph without scale values. It is used to talk about the history of something that changes with time. It helps give students experience in graph interpretation.

Sound Grapher is an example of probeware that uses the microphone built into most computers. With it, you can capture sound waves, analyze the frequencies present, and compare them.

The Population Explorer lets the user set up environmental pressure on a population and create mutations. The result is genetic drift and evolution.

Self Assembly uses a molecular dynamics simulation to show how biological molecules can join together to make larger structures. Users can make their own molecules and experiment with how they can assemble themselves.



Professional Development

- Seeing Math Elementary
 - TeachScape
- Seeing Math Secondary
 - PBS and CC
- Probes and models
 - Concord Consortium Services

November, 2005

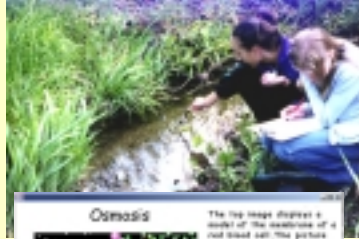
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Slide 5

Most of the free software available at the Concord Consortium is backed by professional development short courses that can be delivered in person or online.



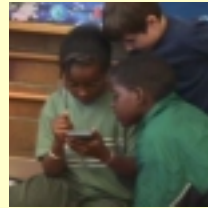
Realizing the Potential of Technology



Osmosis

The top image displays a model of the osmosis of a red blood cell. The picture below shows red blood cells in solution. Use the buttons to add either distilled water and/or concentrated salt. Describe the effect on the red blood cell shape of adding each of these. What is happening at the atomic level?

Students write down



Chromosome 1 Chromosome 2

Chromosome 1 Chromosome 2

Chromosome 1 Chromosome 2

Click on a light to show its DNA.

<http://www.concord.org/>

November, 2005

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Slide 6