NSTA WEB SEMINARS

LIVE INTERACTIVE LEARNING @ YOUR DESKTOP

NSDL/NSTA Web Seminar

Beyond Penguins and Polar Bears: Integrating Science and Literacy in the K-5 Classroom-- Physical Science from the Poles

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Wednesday, October 29, 2008
6:30 p.m. to 8:00 p.m. Eastern time

Agenda:

1. Introductions
2. Tech-help info
3. Web Seminar tools
4. Presentation
5. Evaluation
6. Chat with the presenters

Supporting the NSDL Presenting Team is…

For additional Tech-help call:

Elluminate Support,

1-866-388-8674 (Option 2)

Jeff Layman

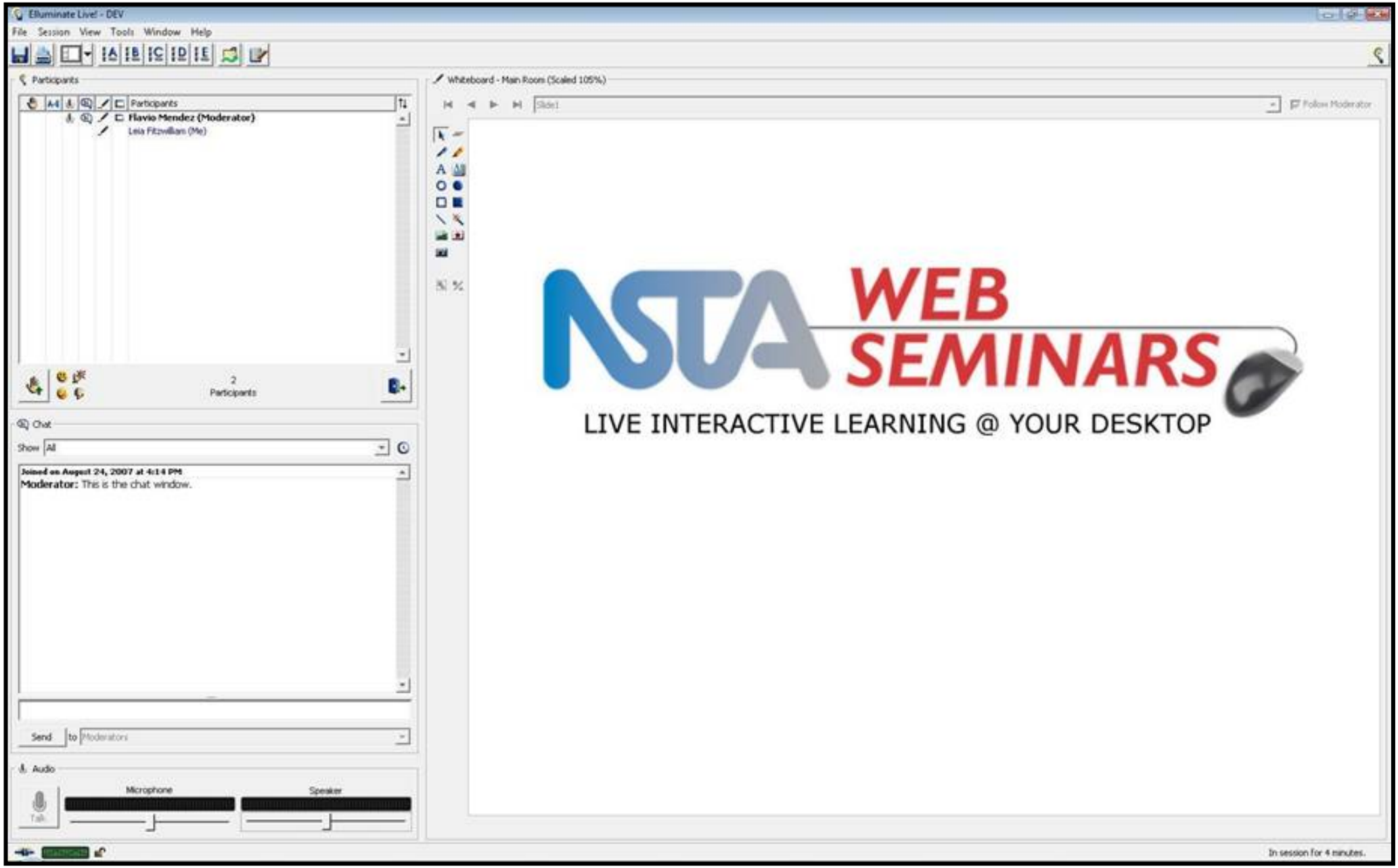
Tech Support

NSTA

jlayman@nsta.org

703-312-9384

Screenshot


Elluminate Live! - DEV
File Session View Tools Window Help
Participants
Participants
Flavio Mendez (Moderator)
Leia Fitzwilliam (Me)
2
Participants
Chat
Show All
Joined on August 24, 2007 at 4:14 PM
Moderator: This is the chat window.
Send to Moderators
Audio
Microphone
Speaker
Talk
Whiteboard - Main Room (Scaled 105%)
Slide1
Follow Moderator
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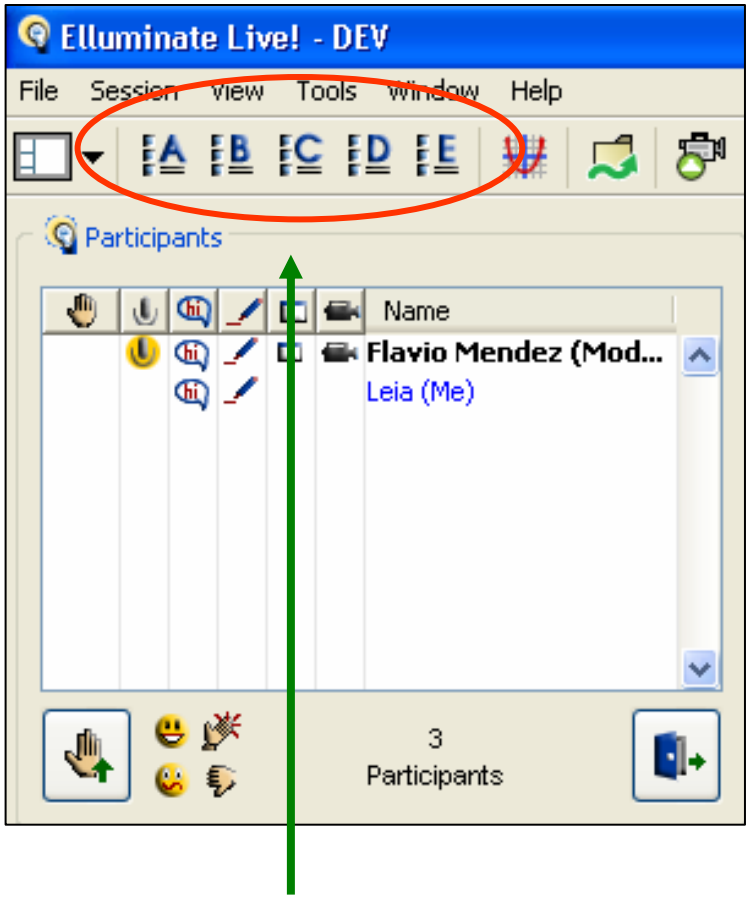
In session for 4 minutes.

We would like to know more about you…

How many NSTA web seminars have you attended?



Use the letters A-E located at the top left of your actual screen to answer the poll

A. 1-3

B. 4-5

C. More than 5

D. More than 10

E. This is my first web seminar

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How many NSTA web seminars have you attended?

A. 1-3

B. 4-5

C. More than 5

D. More than 10

E. This is my first NSTA web seminar

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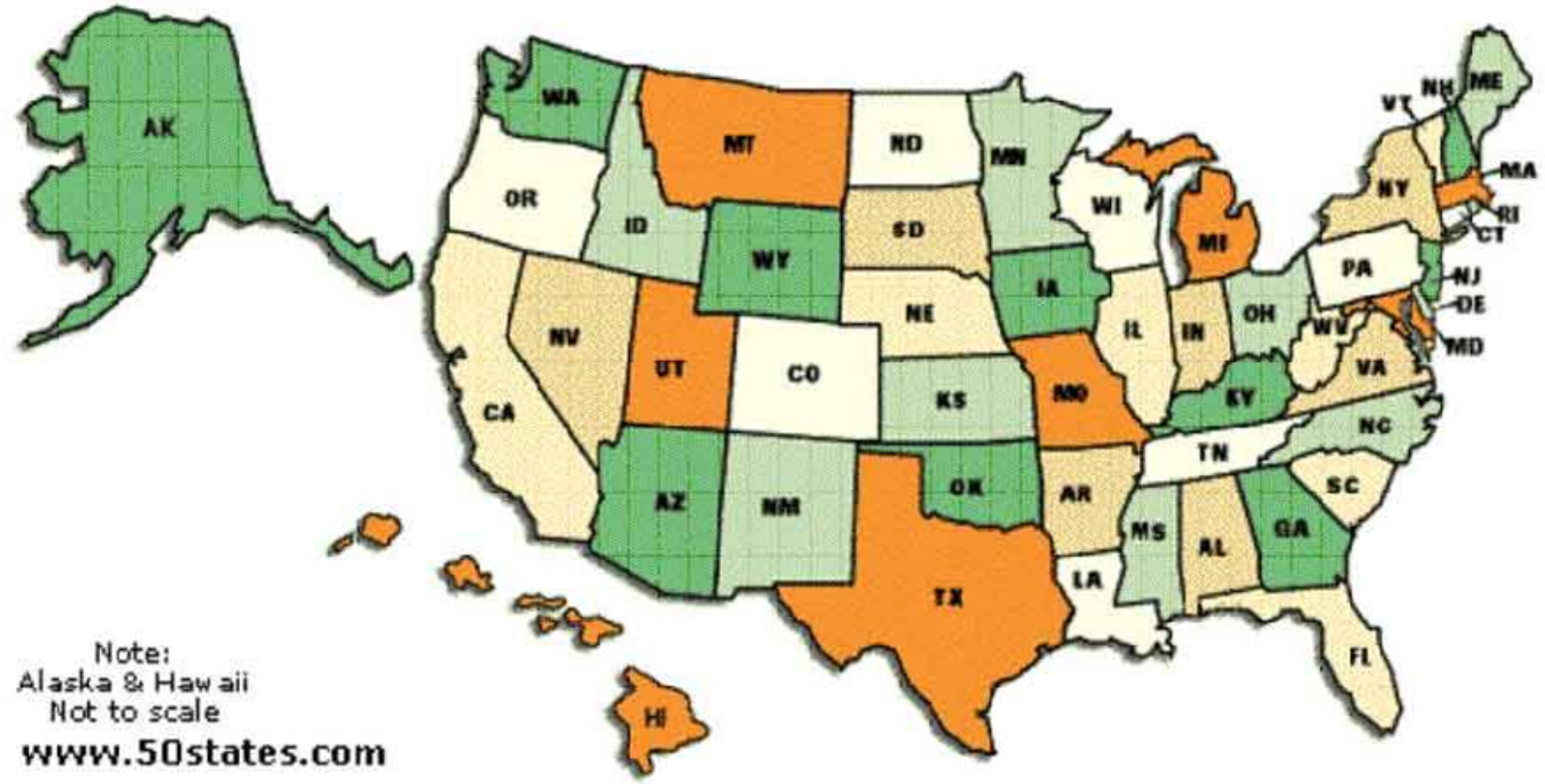
Where are you now?



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What grade level do you teach?

A. Elementary School, K-5.

B. Middle School, 6-8.

C. High School, 9-12.

D. I teach college students.

E. I am an Informal Educator.

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Beyond Penguins and Polar Bears: Integrating Science and Literacy in the K-5 Classroom-- Physical Science from the Poles

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Wednesday, October 29, 2008

Today's NSDL Experts

Jessica Fries-Gaither, *Beyond Penguins and Polar Bears* Project Director and Elementary Resource Specialist, Ohio State University

Dr. Carol Landis, Education Outreach Specialist, Byrd Polar Research Center, Ohio State University

BEYOND PENGUINS AND POLAR BEARS

http://beyondpenguins.nsdl.org

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Overview of Presentation

1. Physical properties of ice
2. Geography of ice
3. Teaching strategies and K-5 resources from *Beyond Penguins and Polar Bears*

http://beyondpenguins.nsdl.org

Today's presentation: Featuring material related to Issue 5: Water, Ice, and Snow, August 2008

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States of matter: Solid, Liquid, Gas

Photo by Chris Linder,
Woods Hole Oceanographic Institution

Photo by C. Landis,
Byrd Polar Research Center

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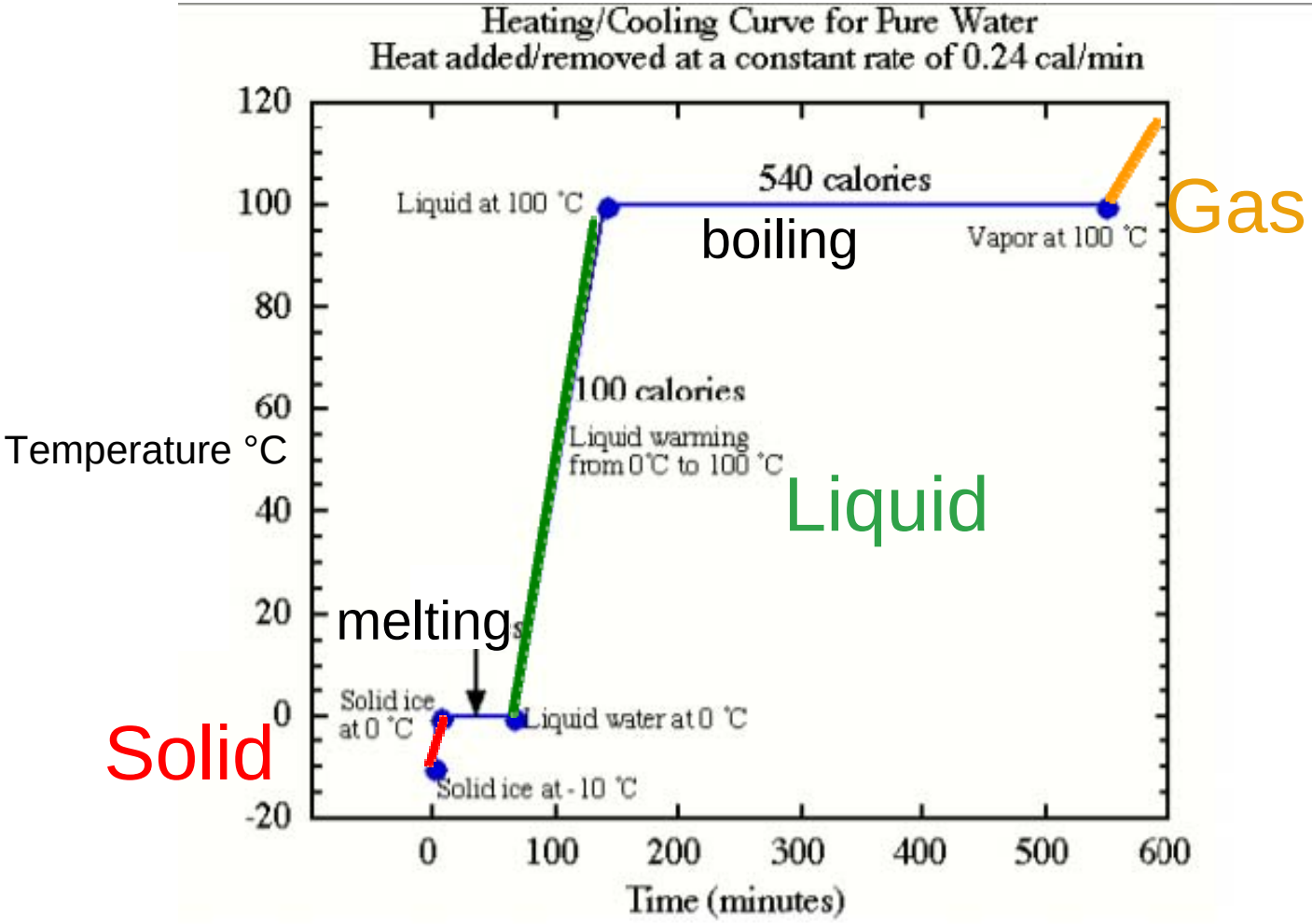
Change in state (or phase) of water

Addition or loss of heat is required to change from one state to another.



http://www.geo.umn.edu/courses/1006/Fall00_night/H20_heating_curve.JPG

States of matter
Stamp your answers.

A change of state does not mean a change in mass.

True	False

Solids can only melt with heat.

True	False

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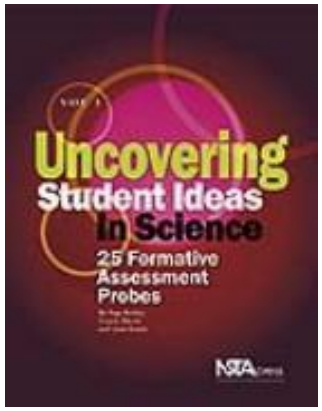
Misconceptions:
States and Changes of Matter



[Formative Assessment:](#) Mass conservation
"Ice Cubes in a Bag" (Vol. 1)

CReSIS
Center for Remote Sensing of Ice Sheets

[Blue Ice Melt:](#)
Ice can melt with pressure.

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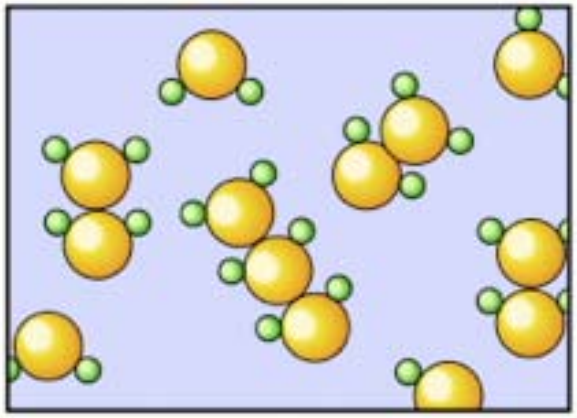
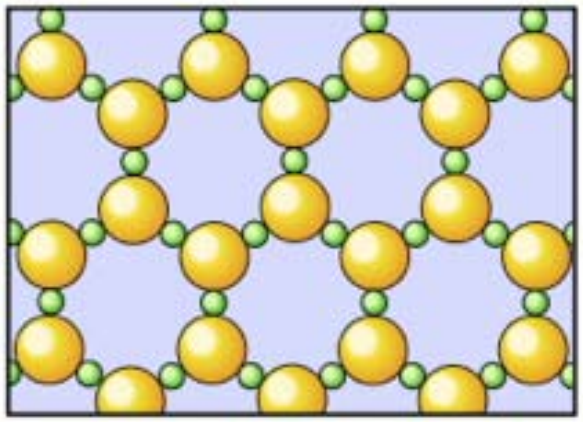
Admiring snowflakes

Liquid water



Solid water



Pidwirny, M. (2006). "Physical Properties of Water". *Fundamentals of Physical Geography, 2nd Edition*. Date viewed: October 16, 2008. http://www.physicalgeography.net/fundamentals/8a.html

http://www.classzone.com

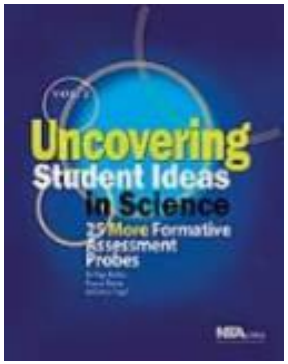
http://nsdl.org

Stamp your answer

Does the size of an ice cube affect the temperature at which it freezes?

Yes	No

Misconception: The more water there is to freeze, the lower the temperature is required to freeze it.



Formative Assessment:
"Freezing Ice" (Vol. 2)

Instead: The temperature of the freezing point is independent of the amount of liquid.

Density is the mass per unit volume of a substance.

Photo: www.dkimages.com

Buoyancy is the force of a liquid pushing up to keep something afloat.

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True or False: Stamp your answer

Water expands as it freezes because the molecules become larger.

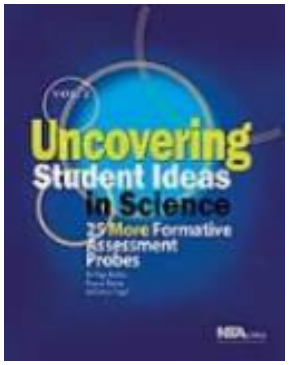
True	False

Misconceptions about Density & Buoyancy

Floating or sinking is based on an object's weight.
Water expands as it freezes because the molecules become larger.

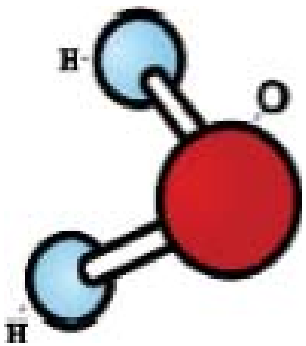
Instead:
Floating or sinking is based on an object's density.

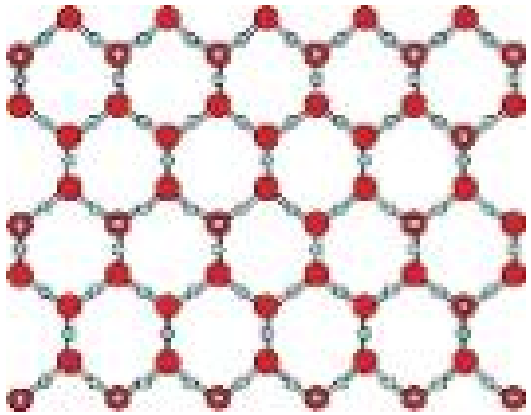
Water expands as it freezes because the molecules are locked into place in a crystalline structure.

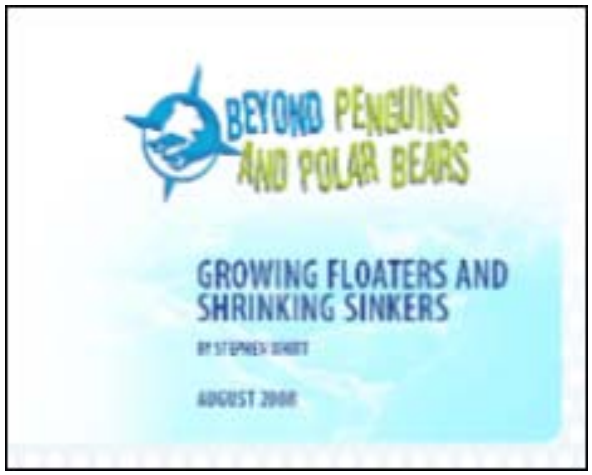


Formative Assessment: “Floating Logs” & “Floating High and Low” (Vol. 2)

Model and read about water and ice







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Let’s pause for questions from the audience….

Ice formation

Ice on land is usually from precipitation, unless it is freezing water that is present in saturated soil.

Ice forming on water develops at the liquid surface of the water…and therefore on the bottom of any ice layer at the surface.

Geography of Ice

Land-based ice:

- ice sheet
- ice field
- glacier
- ice stream

Ice on/in the ocean:

- ice shelf
- ice floe
- sea ice
- iceberg

A glacier in the Transantarctic Mts.
http://photolibrary.usap.gov/index2.htm

Ross Sea ice edge, 1957
http://photolibrary.usap.gov/index2.htm

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Glaciers

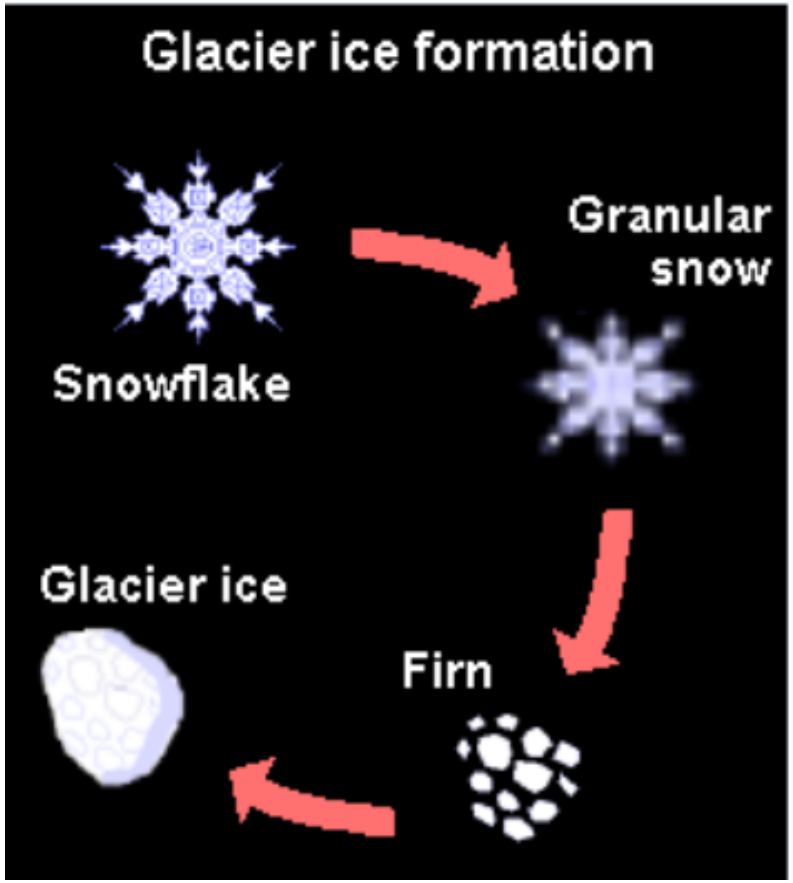


Diagram: http://www.answers.com/glacier

Photo: Glenn Grant, NSF

Studying Ice Cores

Photo: Robert R Stewart,Texas A&M

http://oceanworld.tamu.edu/resources/oceanography-book/evidenceforwarming.htm

Ice Cores:

- Trap gases and wind blown materials
- Can show layering, especially dust layers in dry seasons
- Some date back to almost 800,000 years before present

Effects on sea level: Land ice vs. sea ice

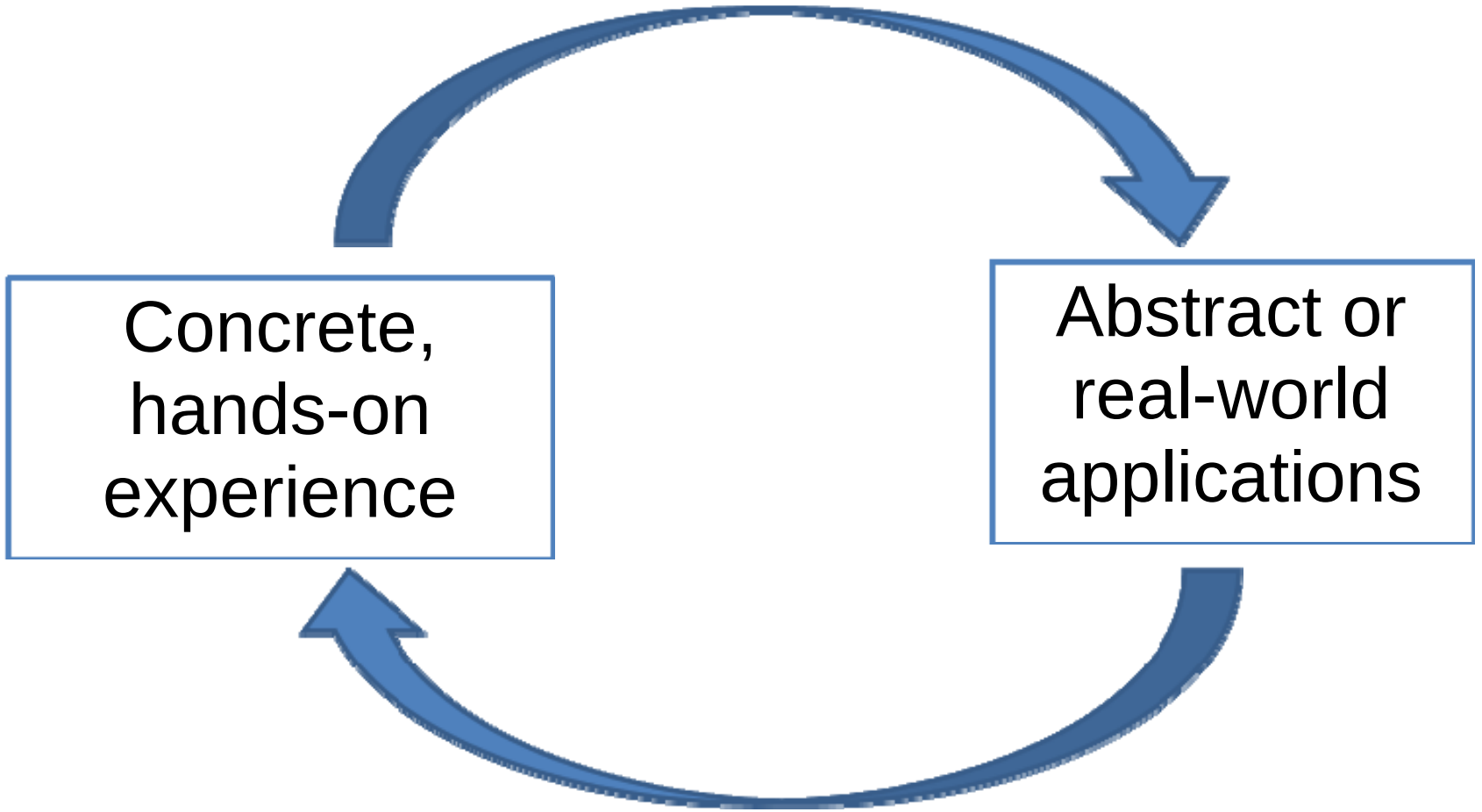
Land-based ice is perched above sea level. If it melts, the water drains downward, potentially adding water into the ocean. The water that reaches the ocean will thereby raise sea level.

Photo: JasonBox, Byrd Polar Research Center

Photo: Zee Evans, NSF

Sea ice is already floating (displacing its mass) and it was formed from sea water. Melting of sea ice will not raise sea level appreciably.

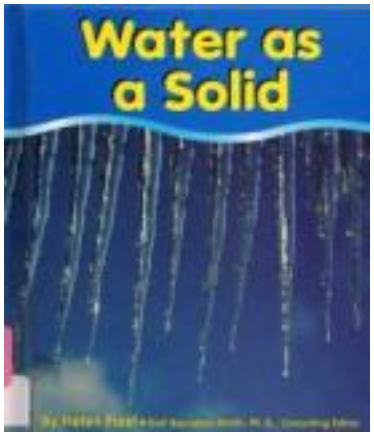
Which comes first?

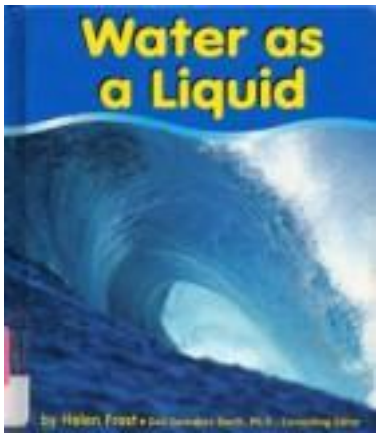


Stamp one of the boxes

Activities: States & Changes of Matter

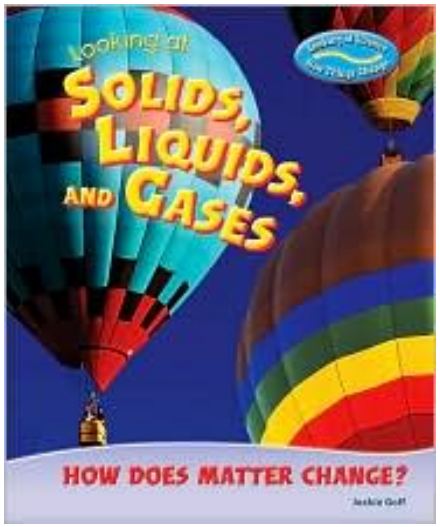
Hands-on investigations
and content area reading





Water and Ice

Students in grades K-2 observe water as it changes states.



Heat Energy and Water

Students in grades 3-5 investigate heat's effect on water.

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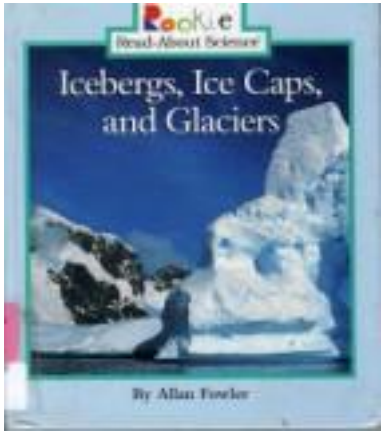
Activities: States & Changes of Matter

Polar Connections:
glaciers, icebergs, sea ice



[How Do Snowflakes Become Ice?]

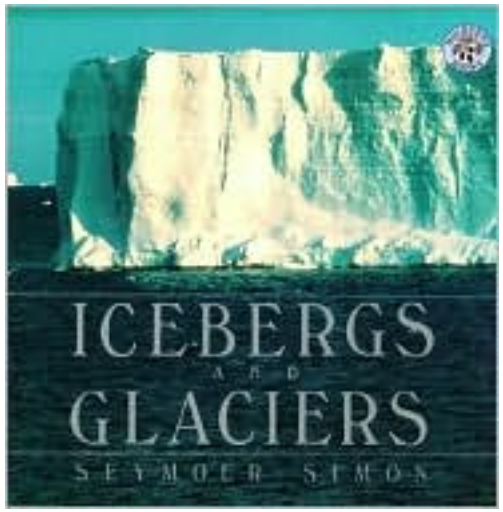
Model glacier formation with marshmallows.

[Do It Yourself Iceberg Science]

Create icebergs with film canisters.

[Sea Ice Set]

A collection of images and video.



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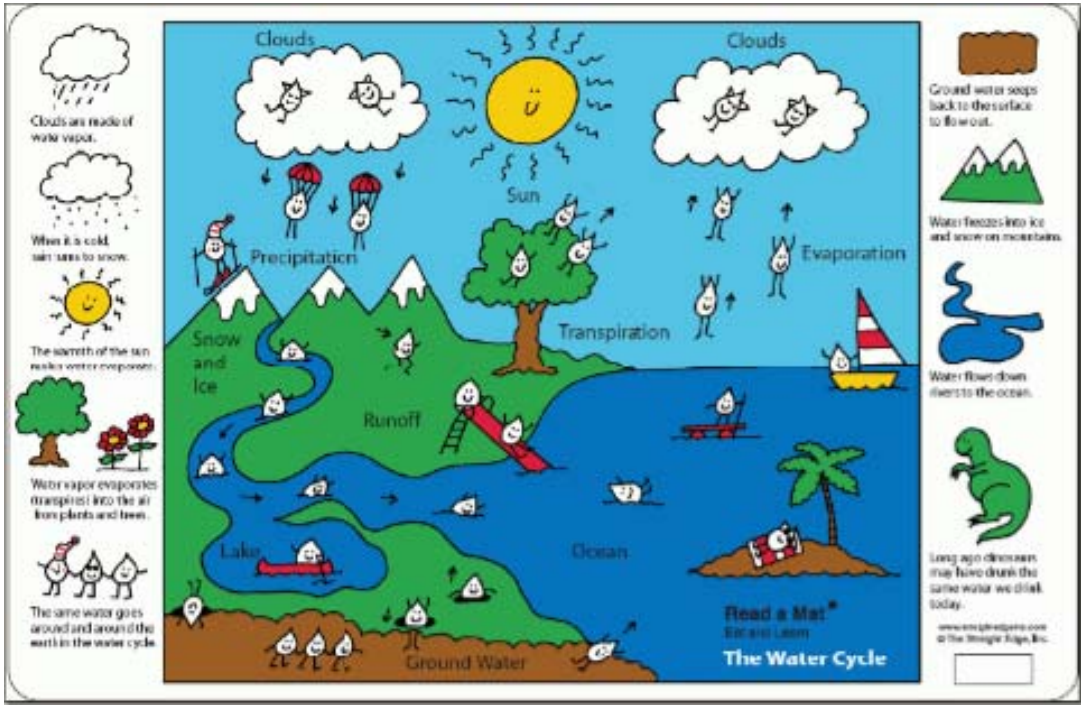
Tie to the global Water Cycle

Don’t forget about ice and snow!

Beyond Penguins and Polar Bears Issue 5 (August 2008): [Water, Ice, and Snow]



http://nsdl.org

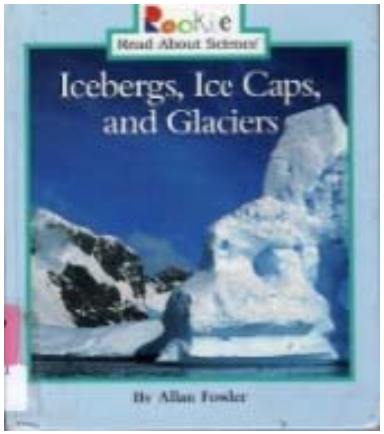
Density and Buoyancy: Grades K-2

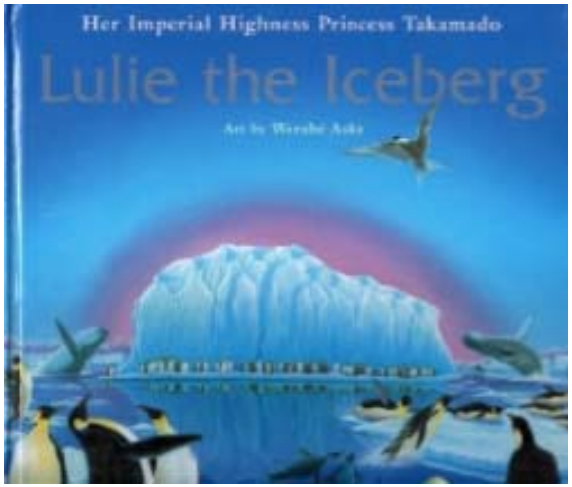
Sink or Float?

Students determine whether objects sink or float in water. Include ice in various shapes and sizes!

Do It Yourself Iceberg Science

Create icebergs with film canisters, watch them float.





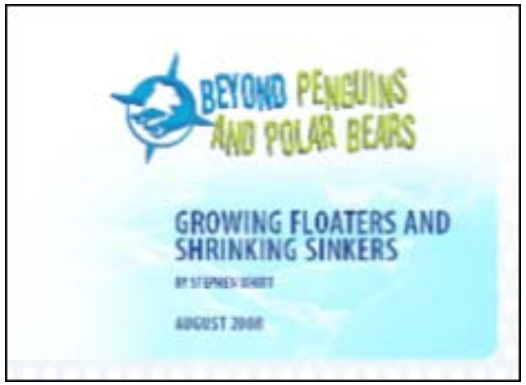
Density and Buoyancy: Grades 3-5

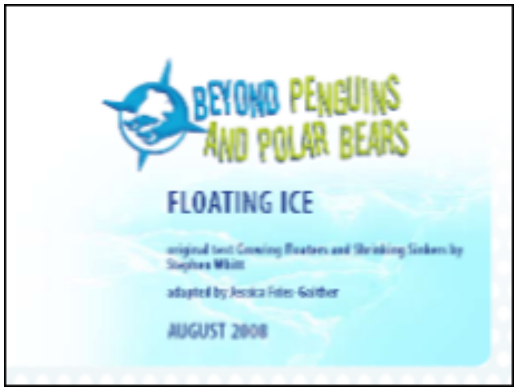
Water Molecule Pockets

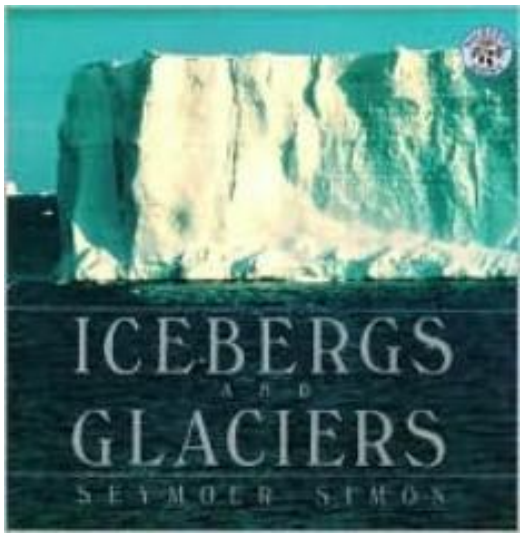
Demonstrate liquid water's molecular structure with a discrepant event and a model.

The Magic Trick with Ice

A discrepant event – an ice cube floats in water but not rubbing alcohol.





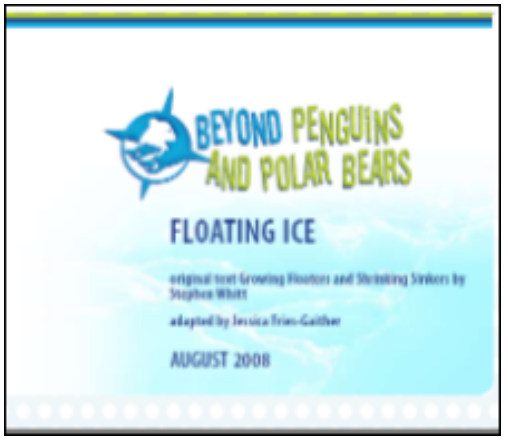


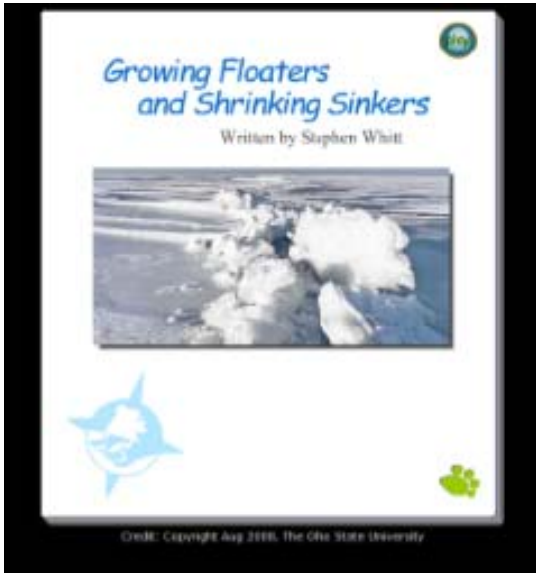
Nonfiction stories for students

Feature Story column of the magazine

Available at three grade levels (K-1, 2-3, and 4-5)

Available as text, illustrated book, and electronic book





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Let’s pause for questions from the audience….

Interested in learning more?

Beyond Penguins Web Seminar Series:
November 13th--Energy and the Polar Environment

Beyond Penguins and Polar Bears Blog
http://beyondpenguins.nsdl.org/2008/10/29/physical-science-from-the-poles/

Beyond Penguins and Polar Bears, August 2008, Issue 5
http://beyondpenguins.nsdl.org

http://nsdl.org

http://beyondpenguins.nsdl.org

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THANK YOU!

BEYOND PENGUINS AND POLAR BEARS

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Go to http://nsdl.org and click on the K-12 audience page to:

- Download our Seminar Resource List
- Find resources from archived seminars

Learn about new tools and resources, discuss issues related to science education, find out about ways to enhance your teaching at: http://expertvoices.nsdl.org/learningdigitalK12

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- *Toshiba/NSTA ExploraVision Awards: How to Submit Quality ExploraVision Entries*

November 5, 2008

- *NSTA: The Learning Center – Focus on Education Leaders*

November 12, 2008

- *NSDL: Beyond Penguins and Polar Bears: Energy and the Polar Environment*

November 13, 2008

National Science Teachers Association

Dr. Francis Q. Eberle, Executive Director

Zipporah Miller, Associate Executive Director Conferences and Programs

Al Byers, Assistant Executive Director e-Learning

NSTA Web Seminars

Flavio Mendez, Senior Director

Jeff Layman, Technical Coordinator

Web Seminar Evaluation:

Click on the URL located on the Chat Window