NSDL/NSTA Web Seminar:

It’s Alive: Using Online Life Science Resources in the Middle School Classroom

Tuesday, April 1, 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

http://nsdl.org
Screenshot
We would like to know more about you…

http://nsdl.org
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 web seminar

Use the letters A-E located at the top left of your actual screen to answer the poll.
Where are you now?

Note:
Alaska & Hawaii
Not to scale
www.50states.com

http://nsdl.org
What grade level do you teach?

A. Elementary School, K-5.
B. Middle School, 6-8.
C. High School, 9-12.
D. I teach undergrad and/or grad students.
E. I am an Informal Educator.

http://nsdl.org
NSDL/NSTA Web Seminar:

It’s Alive: Using Online Life Science Resources in the Middle School Classroom

Tuesday, April 1, 2008
Welcome!
Chad Dorsey & Joyce Tugel
Science Specialists

Maine Mathematics and Science Alliance

PRISMS Project:
Phenomena and Representations for the Instruction of Science in Middle Schools
How often do you use digital resources with students?

A. At least once a week  
B. A few times a month  
C. Once a month  
D. A few times a year
An entire new world of exciting online resources is open to teachers today
Teachers must seek out these resources and then determine which will be useful.
Resources that are available or attractive may not support learning effectively.
Using the right resources in appropriate ways can bring students to great places.
Use the PRISMS collection and analyses to plot a route to effective student learning.
PRISMS reviews relate resources to learning goals and are part of the NSDL.
Content Alignment

A resource should address the intended content in order to be useful

http://nsdl.org
Learning goals may be broken into smaller ideas, which are clarified further.

Students can get pretty far along in their study of organisms before they need to learn that all activities within organisms occur at the level of the cell. The large number of cells in the body of an organism, even the smallest one, is difficult for the student to grasp. A human body contains more than 10^14 cells, but this number means little to middle-school students. A million millions might have a better chance of making an impression.

Students may have even more difficulty with the idea that cells are the basic units in which life processes occur. Neither familiarity with functions of regular-sized organisms nor observation of single-celled organisms will reveal much about the chemical activity going on...
Resources may address an entire key idea or only part of one.
A Practice Example

Key Idea:

http://www.teachersdomain.org/resources/tdc02/sci/life/cell/cellgallery/assets/tdc02_img_cellgallery/tdc02_img_cellgallery_jpg.html
A Practice Example

Key Idea:

one to many millions, whose details usually are visible only through a microscope. Different body tissues and organs are made up of different kinds of cells. The cells in similar tissues and organs in other animals are similar to those in human beings but differ somewhat from cells found in plants.

<table>
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<tr>
<th>Yes</th>
<th>No</th>
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<tr>
<th>Entire Idea</th>
<th>Just a Part</th>
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</table>

http://www.teachersdomain.org/resources/tdc02/sci/life/cell/cellgallery/assets/tdc02_img_cellgallery/tdc02_img_cellgallery_jpg.html
Which Part?

one to many millions, whose details usually are visible only through a microscope. Different body tissues and organs are made up of different kinds of cells. The cells in similar tissues and organs in other animals are similar to those in human beings but differ somewhat from cells found in plants.
Which Part?

Different body tissues and organs are made up of different kinds of cells. The cells in similar tissues and organs in other animals are similar to those in human beings but differ somewhat from cells found in plants.
Plants use the energy from light to make sugars from carbon dioxide and water.
Plants use the energy from light to make sugars from carbon dioxide and water.

To which part of the learning goal is this resource aligned?

Write your answers on the chat.
Alignment can be a tricky business…

Plants use the energy from light to make sugars from carbon dioxide and water.
Resources may include detail that raises their sophistication above grade level.

Within cells, many of the basic functions of organisms—such as extracting energy from food and getting rid of waste—are carried out.

http://www.cellsalive.com/cells/cell_model.htm
Resources may include detail that raises their sophistication above grade level.

Withing cells, many of the basic functions of organisms—such as extracting energy from food and getting rid of waste—are carried out.

Mitochondria provide the energy a cell needs to move, divide, produce, contract— in short, they are the power centers about the size of bacteria but may have different shapes or type.

http://www.cellsalive.com/cells/cell_model.htm
Resources may include detail that raises their sophistication above grade level

Within cells, many of the basic functions of organisms—such as extracting energy from food and getting rid of waste—are carried out.

Mitochondria are membrane-bound organelles, and like the membrane. The outer membrane is fairly smooth. But the inner membrane is convoluted, forming folds (cristae) as seen in the cross-section. This greatly increase the inner membrane's surface area. It is on the inner membrane that food (sugar) is combined with oxygen to produce ATP—the energy currency for the cell.

http://www.cellsalive.com/cells/cell_model.htm
Let’s pause for questions from the audience....
Instructional Quality

Resources should convey the targeted learning goal to students effectively.

Source: Flickr– Dano

http://nsdl.org
Resources should have an accurate and clear connection to the learning goal

http://nsdl.org
Representations should represent the learning goal accurately

All organisms, both land-based and aquatic, are interconnected by their need for food. This network of interconnections is referred to as a food web. The entire earth can be considered a single global food web, and food webs can also be described for a particular environment.

How does this do?

http://www.globalchange.umich.edu/globalchange1/current/lectures/kling/energyflow/energyflow.html

http://nsdl.org
Resources should make the learning goal comprehensible to students

http://nsdl.org
Resources should avoid reinforcing incorrect commonly held student ideas
Reasoning skills and additional ideas required should be reasonable.

Plants use the energy from light to make sugars from carbon dioxide and water.
Resources should be clear about their simplifications or assumptions

http://nsdl.org
Resources should be clear about their simplifications or assumptions.
Let’s pause for questions from the audience....
Modifying a resource or adding instructional support can sometimes improve its alignment and usefulness.

http://nsdl.org
Removing or de-emphasizing vocabulary can improve content alignment

http://curriculum.calstatela.edu/courses/builders/lessons/less/biomes/rainforest/temp_rain/tempweb.html
Removing or de-emphasizing vocabulary can improve content alignment.

**Sophistication**

The resource reflects a higher level of sophistication than the learning goal does.

To improve alignment, the user can remind students that the specific terms used are not important at this point.
Adding instructional supports or classroom experiences may make resources more useful
All organisms, both land-based and aquatic, are interconnected by their need for food. This network of interconnections is referred to as a food web. The entire earth can be considered a single global food web, and food webs can also be described for a particular environment.

Imagine you were using this resource to help students reach this learning goal.

What could you do as a teacher to improve the content alignment of this resource when presenting it to students?

Write your answers on the chat
The PRISMS collection assembles resource reviews as part of the NSDL

http://nsdl.org
Can we find online resources that promote learning effectively?
Resources that are available or attractive may not support learning effectively.
Bring students to a great place with the PRISMS protocols and library and NSDL
PRISMS: Phenomena and Representations for the Teaching of Science in Middle School

prisms.mmsa.org

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

- Download our Seminar Resource List
- Utilize our blog featuring our presenters for the Seminar Series sharing their insights on careers in science and science education: http://expertvoices.nsdl.org/2007fall-nsta-sems/
Welcome to Your Professional Development

The Learning Center is NSTA's e-professional development portal to help you address your classroom needs and busy schedule. You can gain access to more than 2,600 different resources that cater to your preference for learning. Over 700 hundred resources, such as journal articles, science objects and web seminars are available for free. A suite of practical tools such as My Library, My Transcript, and My Professional Development Plan and Portfolio tool help you organize, personalize, and document your growth over time.

Explore Learning Opportunities

Search

By Subject
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- Life Science
- Physical Science

By Grade Level
- Elementary
- Middle School
- High School
- College

By State Standards
Find resources based on their correlation to your state standards.
Coming Soon!

Do-It-Yourself Learning
Learn at your own pace online with these 1-2 or 6-10 hour interactive activities.

Live Online Seminars & Classes
Learn online from certified instructors with your colleagues. 1-2 hour seminars, week and month long courses are available. Earn state...

http://learningcenter.nsta.org
• NASA JPL: Using Earth to Explore Mars  
  April 3, 2008

• FDA: Teach Science Concepts and Inquiry with Food  
  April 9, 2008

http://learningcenter.nsta.org
Web Seminar Evaluation:

Click on the URL located on the Chat Window