NSDL/NSTA Web Seminar:

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

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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.

Addressing an Intended Learning Goal

(Content Alignment)

Conveying a Learning Goal

The PRISMS Collection

http://nsdl.org
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.

By the end of the 8th grade, students should know that:

- All living things are composed of cells, from just 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.
Resources may address an entire key idea or only part of one


Mauris fusce, suspendisse et, morbi sagittis amet maecenas leo. Consequat lacus blandit orci et nunc quam, nec rhoncus pretium imperdiet purus eget, hendrerit aliquam, purus dolor quam ut id orci. Ipsum sollicitudin fusce elit, eu volupat ut amet ac, inceptos.

http://nsdl.org
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.
A Practice Example

Key Idea:

one to many microns, 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.

Is this example aligned to the key idea?  

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

Does it address the entire idea or just a part of it?

<table>
<thead>
<tr>
<th>Entire Idea</th>
<th>Just a Part</th>
</tr>
</thead>
</table>

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

...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.

http://nsdl.org
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.
To which part of the learning goal is this resource aligned?

Plants use the energy from light to make sugars from carbon dioxide and water.
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To which part of the learning goal is this resource aligned?

Write your answers on the chat.

http://nsdl.org
Alignment can be a tricky business…

Plants use the energy from light to make sugars from carbon dioxide and water.

http://nsdl.org
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
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Within 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, products, 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
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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. These greatly increase the inner membrane's surface area. It is on the inner membrane where 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....
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
Resources should avoid reinforcing incorrect commonly held student ideas.

http://www.bbc.co.uk/schools/gcsebitesize/geography/ecosystems/ecosystemsresourcesrev2.shtml

http://nsdl.org
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
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.

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
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.

http://www.divediscover.whoi.edu/arctic-ecosystem/ecosystem.html

http://nsdl.org
The PRISMS collection assembles resource reviews as part of the NSDL
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

Page Keeley – Principal Investigator: pkeeley@mmsa.org
Joyce Tugel – PRISMS Project Manager: jtugel@mmsa.org
Chad Dorsey – PRISMS Content Associate: cdorsey@mmsa.org
Lynn Farrin – PRISMS Content Associate: lfarrin@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/
http://www.elluminate.com
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

By Subject
- Earth & Space Science
- 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
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
National Science Teachers Association
Gerry Wheeler, Executive Director
Frank Owens, Associate Executive Director
Conferences and Programs
Al Byers, Assistant Executive Director e-Learning

NSTA Web Seminars
Flavio Mendez, Director
Jeff Layman, Technical Coordinator

LIVE INTERACTIVE LEARNING @ YOUR DESKTOP