



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



<http://nsdl.org>



Supporting the NSDL Presenting Team is...



**Jeff Layman
Tech Support
NSTA**

**jlayman@nsta.org
703-312-9384**

For additional Tech-help call:
Elluminate Support,
1-866-388-8674 (Option 2)



<http://nsdl.org>



Screenshot

The screenshot displays the Eluminate Live web seminar interface. The window title is "Eluminate Live - DEV". The menu bar includes "File", "Session", "View", "Tools", "Window", and "Help". The interface is divided into several sections:

- Participants:** A list of participants is shown, including "Flavio Mendez (Moderator)" and "Leia Fitzwilliam (Me)".
- Chat:** A chat window is visible, showing a message from the Moderator: "This is the chat window." The chat window also displays the time "Joined on August 24, 2007 at 4:14 PM".
- Audio:** A section for audio controls, including a microphone icon and a speaker icon, with volume sliders.
- Whiteboard:** The main whiteboard area, titled "Whiteboard - Main Room (Scaled 105%)", displays the NSTA logo and the text "WEB SEMINARS" in large, bold letters. Below this, it says "LIVE INTERACTIVE LEARNING @ YOUR DESKTOP". A mouse cursor is visible near the text.

The bottom right corner of the window indicates "In session for 4 minutes."



We would like to know more
about you...

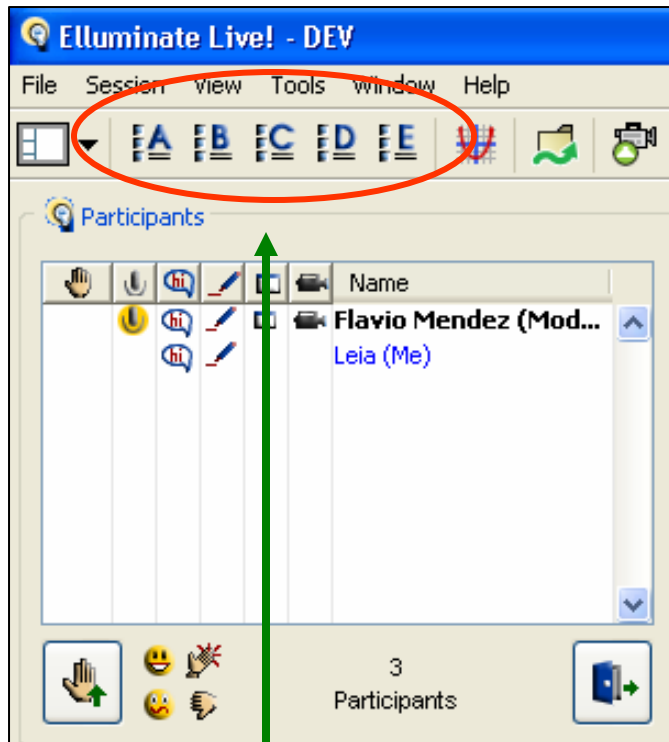


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How many NSTA web seminars have you attended?



A. 1-3

B. 4-5

C. More than 5

D. More than 10

E. This is my first 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



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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 undergrad and/or grad students.
- E. I am an Informal Educator.



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



Maine
MATHEMATICS
and **SCIENCE Alliance**



THE NATIONAL SCIENCE DIGITAL LIBRARY

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



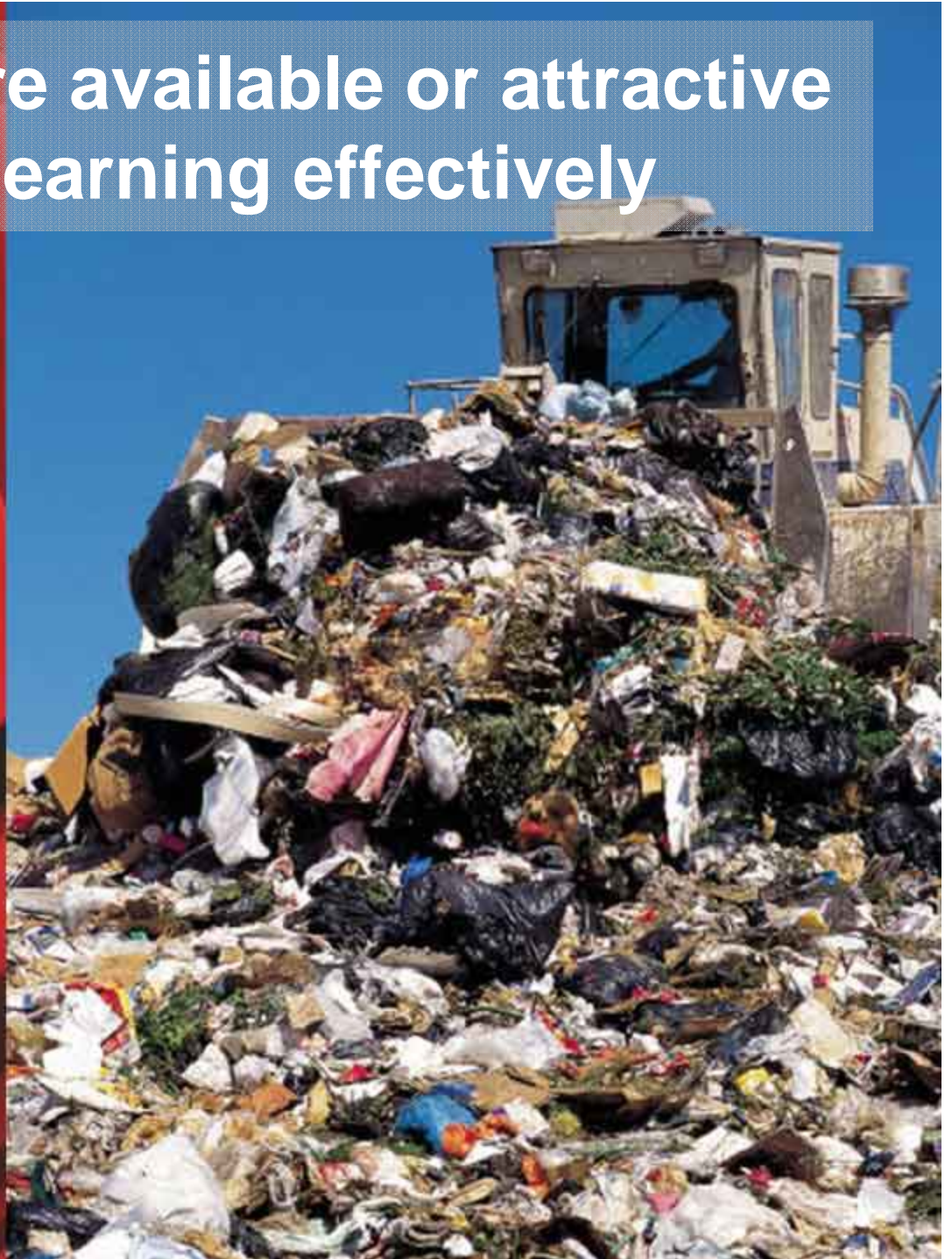
An entire new world of exciting online resources is open to teachers today



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



Addressing an
Intended Learning Goal

(Content Alignment)

Conveying a
Learning Goal

The PRISMS
Collection

PRISMS reviews
relate resources to
learning goals and
are part of the NSDL



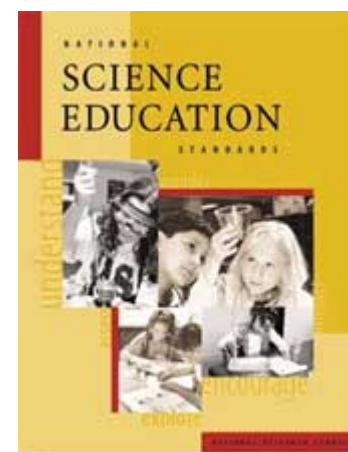
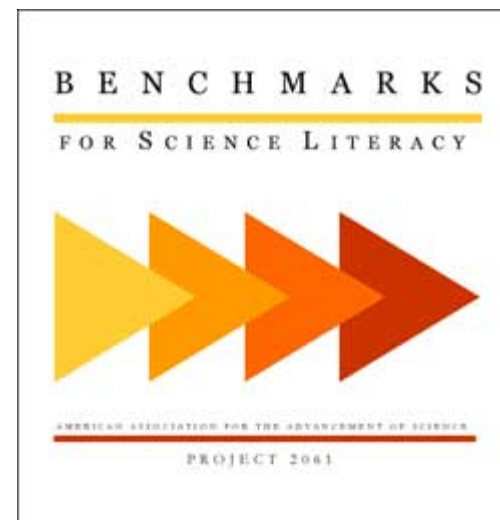
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Content Alignment

**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

Learning Goal



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.

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Key Idea



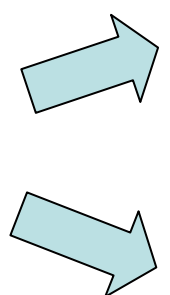
5_C CELLS

Students can get pretty far along in their study of organisms before they need to learn that all activities within organisms depend on the number of large students can use photomicrographs to extend trillion 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

Grades 6 through 8

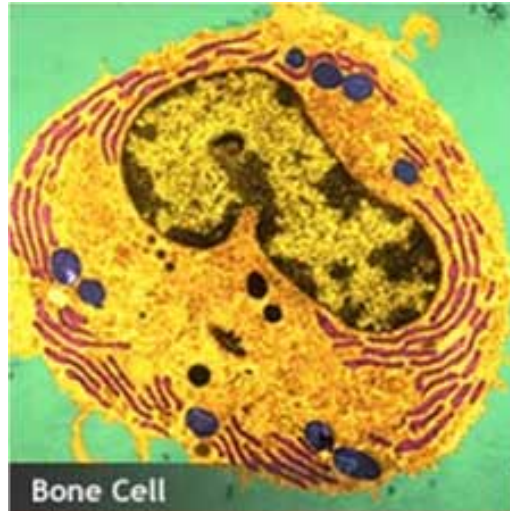
Resources may address an entire key idea or only part of one



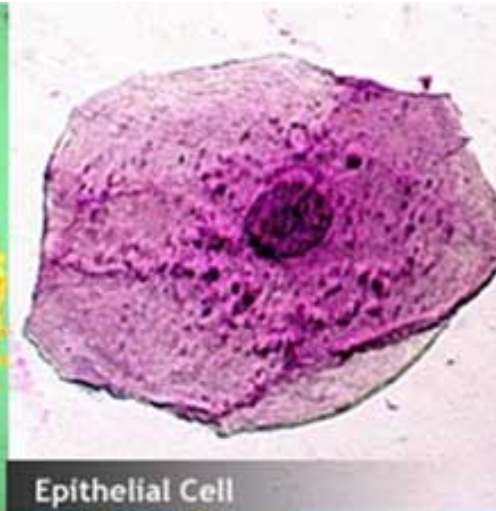
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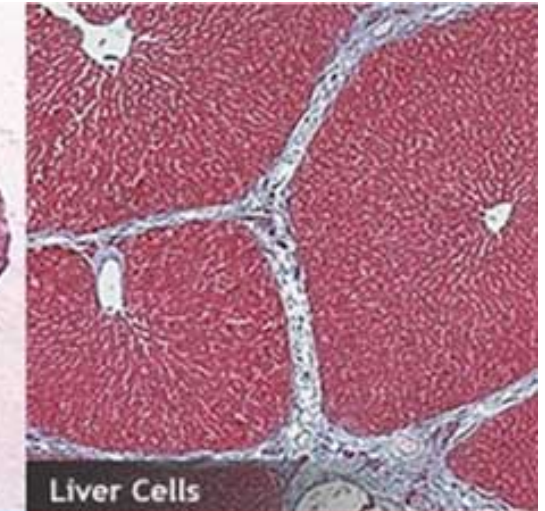
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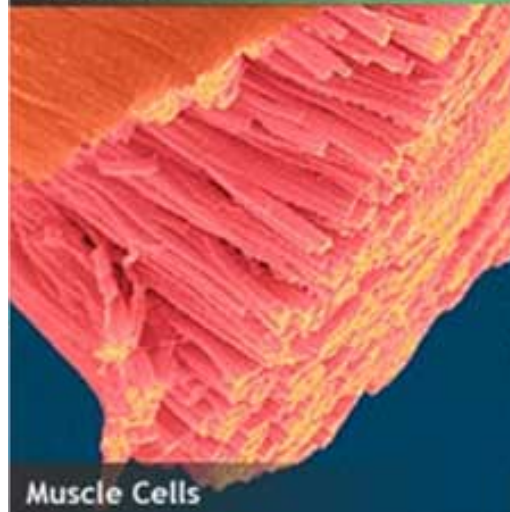
Bone Cell



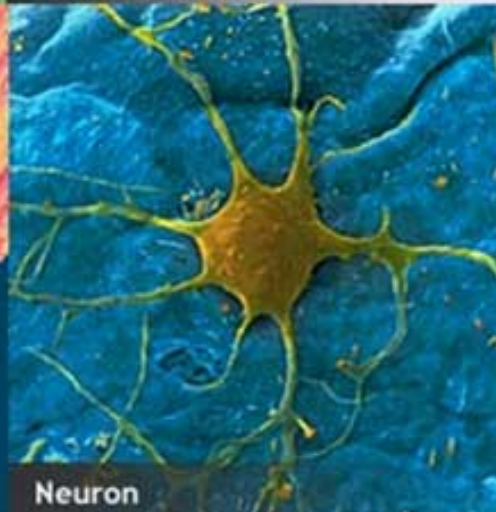
Epithelial Cell



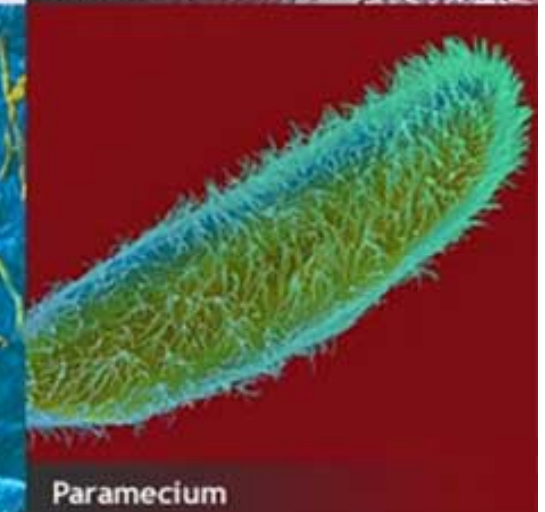
Liver Cells



Muscle Cells



Neuron



Paramecium

A Practice Example

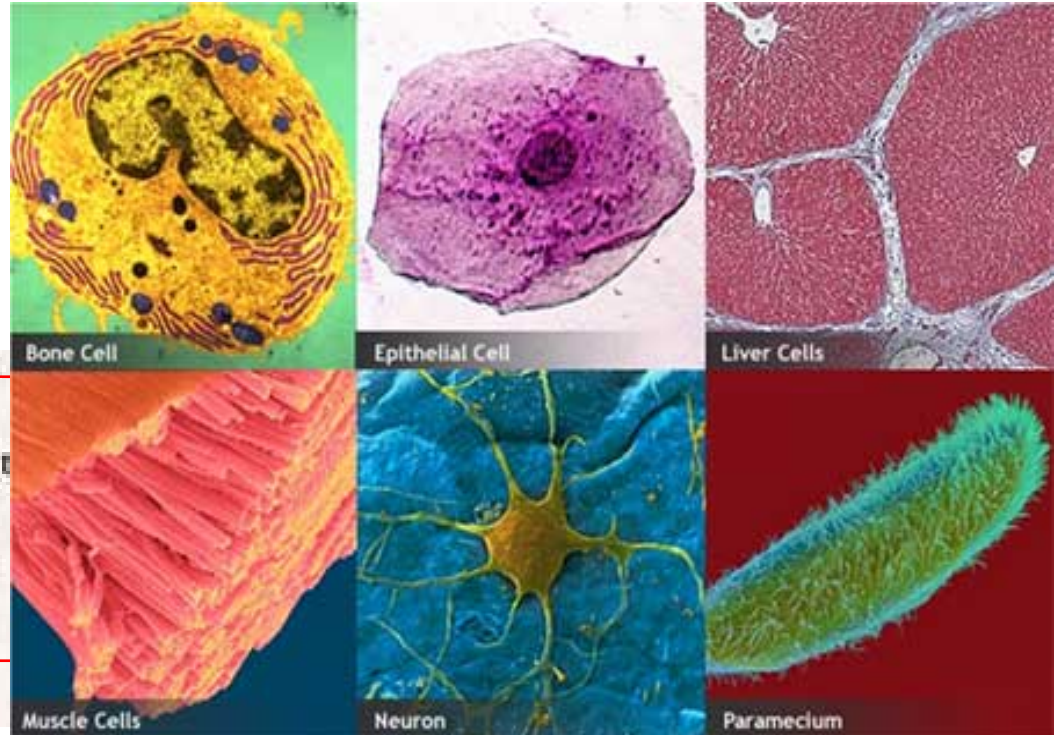
Key Idea:

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 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.



Is this example aligned to the key idea?

Yes	No

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

Entire Idea	Just a Part



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.



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5^E FLOW OF MATTER AND ENERGY

Organisms are linked to one another and to their

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

ecosystems can supplement their direct investigations but should not substitute for them. Most students see food webs and cycles as involving the creation and destruction of matter, rather than the breakdown and reassembly of invisible units. They see various organisms and materials as consisting of different types of matter that are not convertible into one another. Before they have an understanding of atoms, the notion of reusable building blocks common to plants and animals is quite mysterious. So following matter through ecosystems needs to be linked to their study of atoms.

Students' attention should be drawn to the transfer of energy that occurs as one organism eats another. It is important that students learn the differences between how plants and animals obtain food and from it the energy they need. The first stumbling block is *food*,


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

- ▶ Food provides the fuel and the building material for all organisms. Plants use the energy from light to make sugars from carbon dioxide and water. This food can be used immediately or stored for later use. Organisms that eat plants break down the plant structures to produce the material energy they need to survive. Then they are consumed by other organisms.
- ▶ Over a long time, matter is transferred from organism to another repeatedly and between organisms and their physical environment. In all material systems, the total amount of matter remains constant, even though its form and location change.



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

ILLUMINATING PHOTOSYNTHESIS NOVA ONLINE

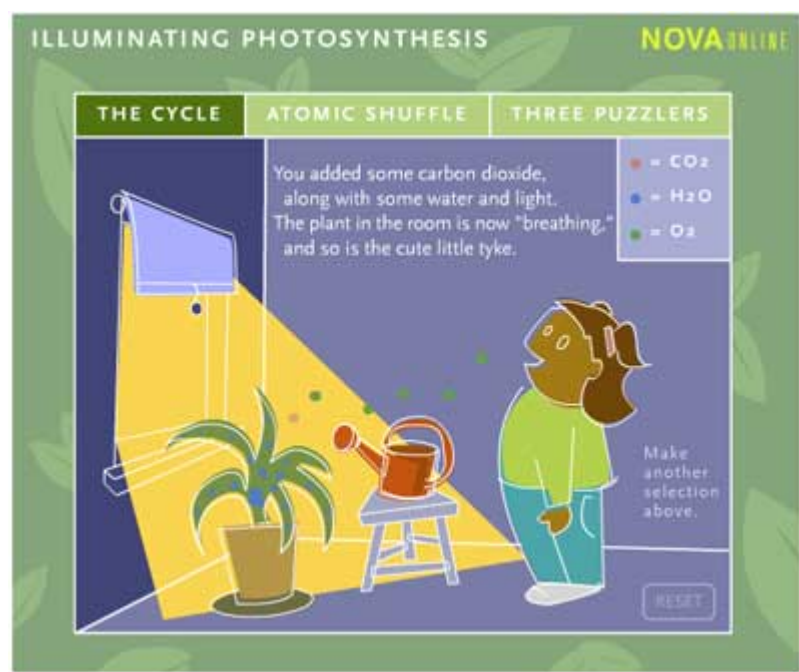
THE CYCLE	ATOMIC SHUFFLE	THREE PUZZLERS
	You added some carbon dioxide, along with some water and light. The plant in the room is now "breathing," and so is the cute little tyke.	<ul style="list-style-type: none">● = CO₂● = H₂O● = O₂
		Make another selection above.
		RESET



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.



ILLUMINATING PHOTOSYNTHESIS NOVA ONLINE

THE CYCLE	ATOMIC SHUFFLE	THREE PUZZLERS
	<p>You added some carbon dioxide, along with some water and light. The plant in the room is now "breathing," and so is the cute little tyke.</p>	<ul style="list-style-type: none">● = CO₂● = H₂O● = O₂ <p>Make another selection above.</p> <p>RESET</p>

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.

5c CELLS

Grades 6 through 8

Once they have some "magnification," students can use photomicrographs of organisms that are mostly made up of cells. Imagining the large number of cells is also a problem for young students. Large organisms are composed of about a trillion cells, but this number means little to middle school students. A million millions might have a better chance of making an impression.

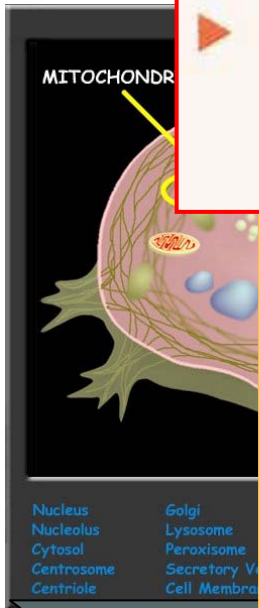
Students may have even more difficulty with the idea that cells are the basic units in which life processes occur. Neither familiarity with functions of regular organisms nor observation of single-celled organisms will reveal much about the chemical activity going



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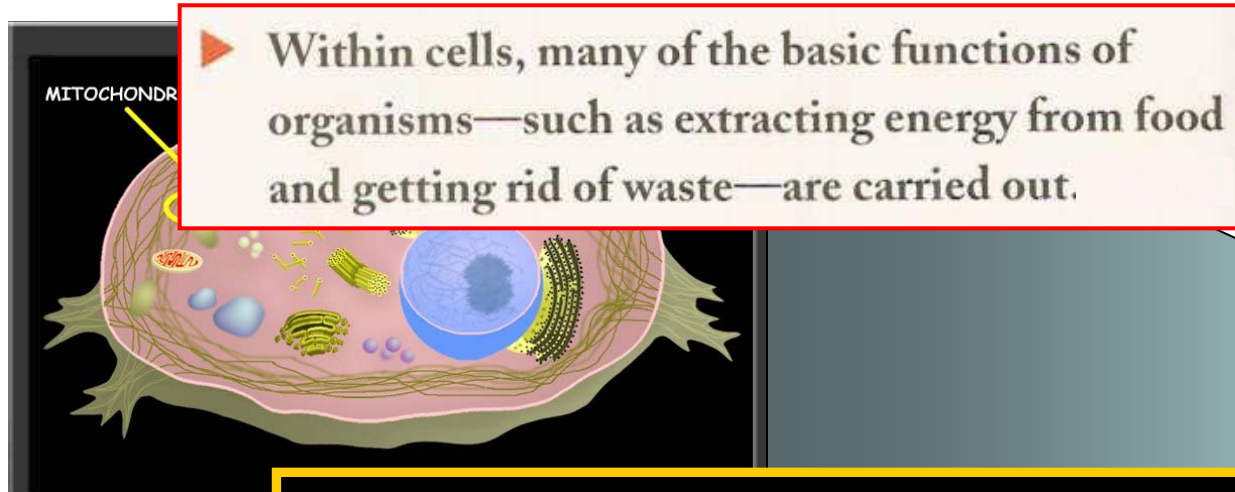
▶ Within cells, many of the basic functions of organisms—such as extracting energy from food and getting rid of waste—are carried out.



MITOCHONDRION

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

Resources may include detail that raises their sophistication above grade level



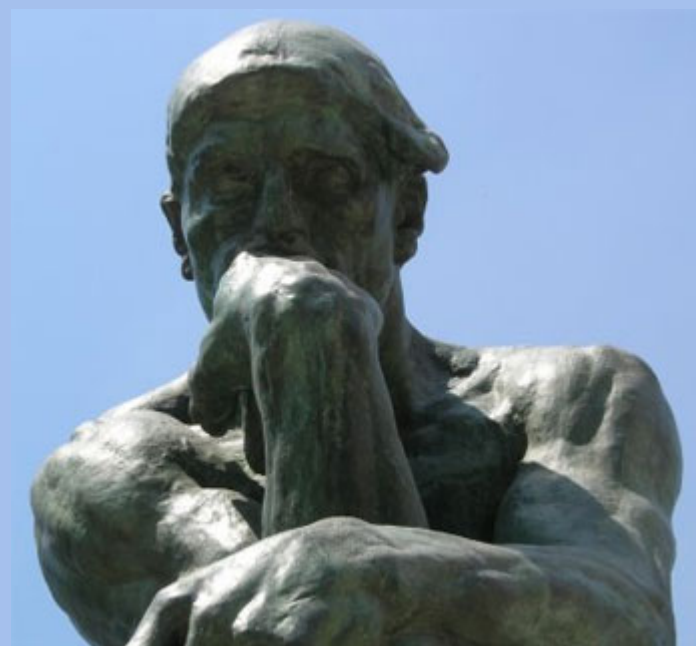
Mitochondria are membrane-bound organelles, and like the cell membrane. The outer membrane is fairly smooth. But the inner membrane is convoluted, forming folds (cristae) as seen in the cross-section. This greatly increases the inner membrane's surface area. It is here that food (sugar) is combined with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



Let's pause for
questions from
the audience....

Instructional Quality

**Resources
should
convey the
targeted
learning
goal to
students
effectively**



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Source: Flickr– *Dano*

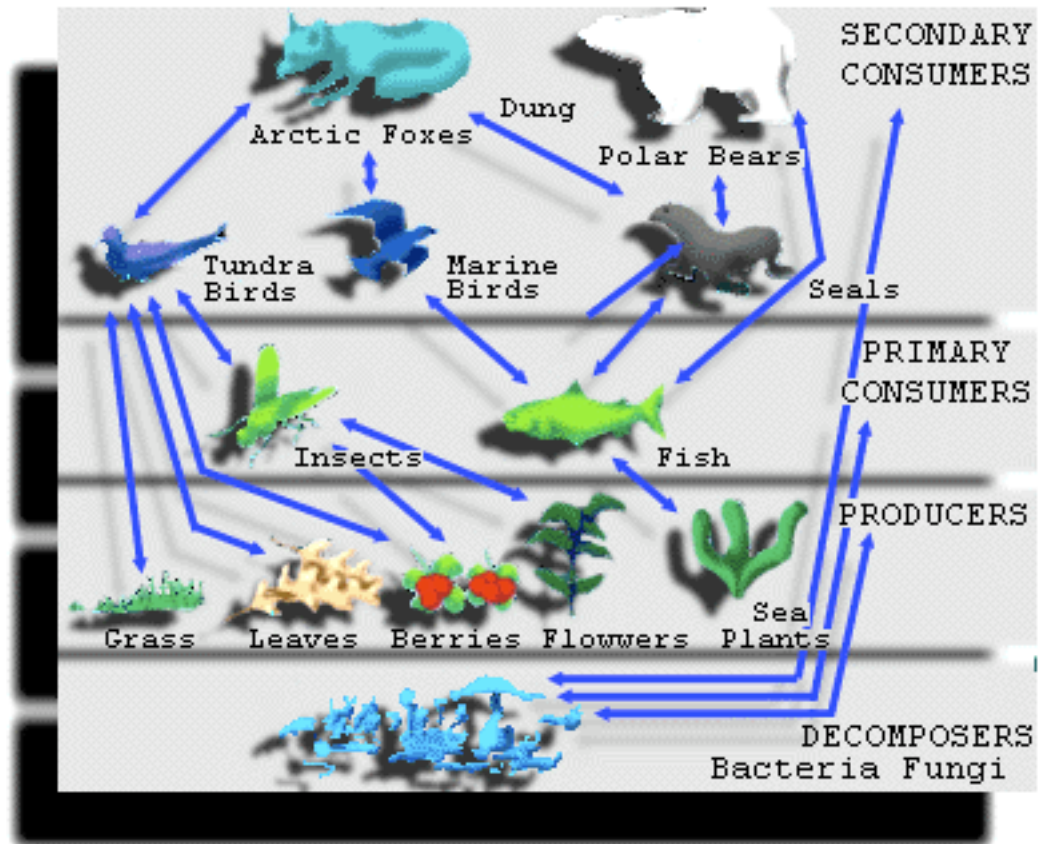


Resources should have an accurate and clear connection to the learning goal



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.



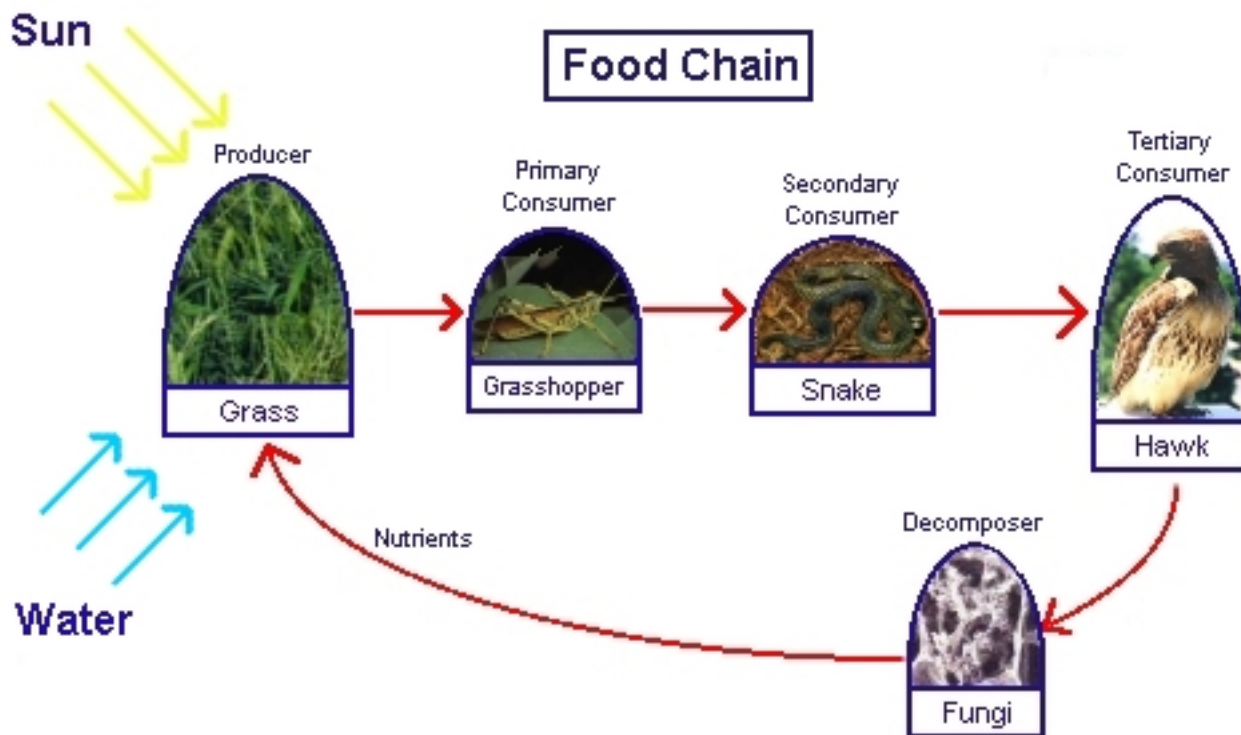
How does this do?



Resources should make the learning goal comprehensible to students



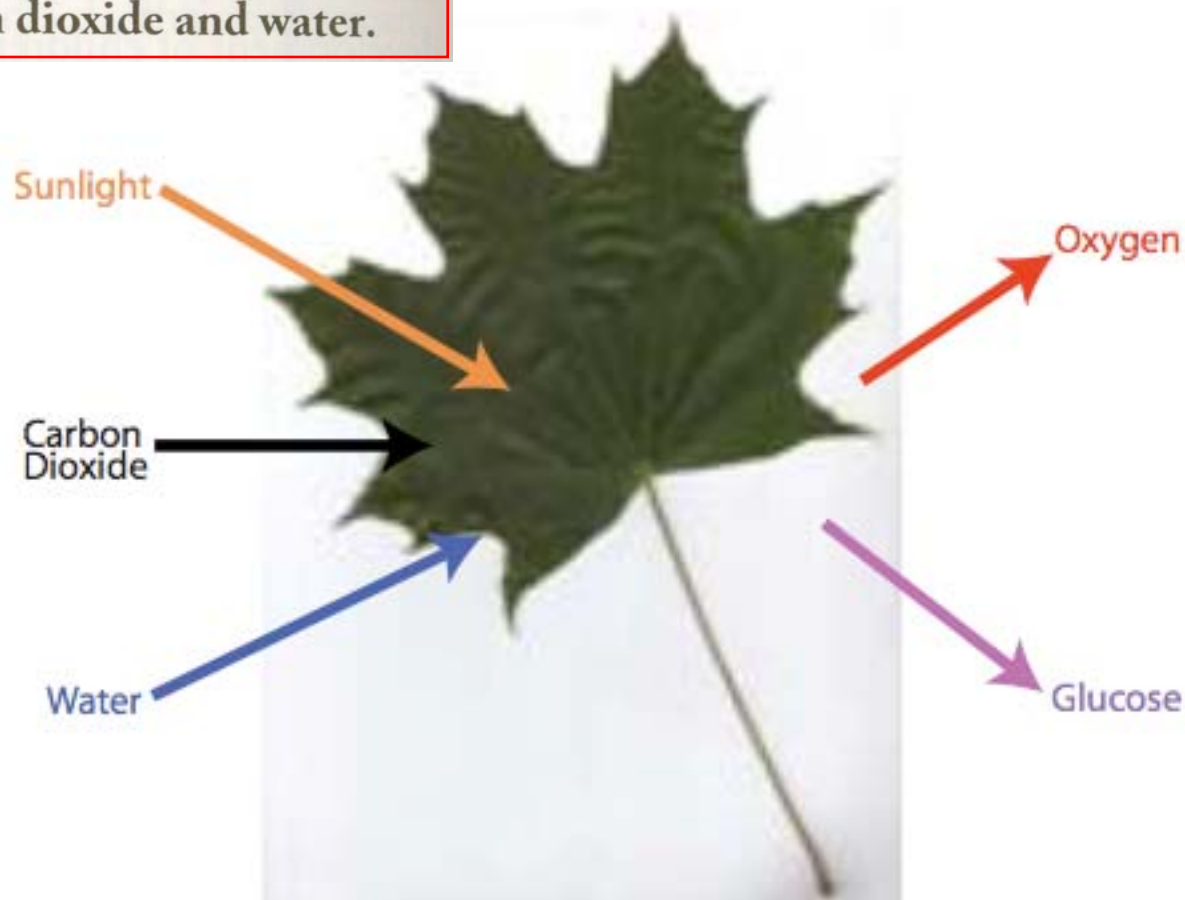
Resources should avoid reinforcing incorrect commonly held student ideas



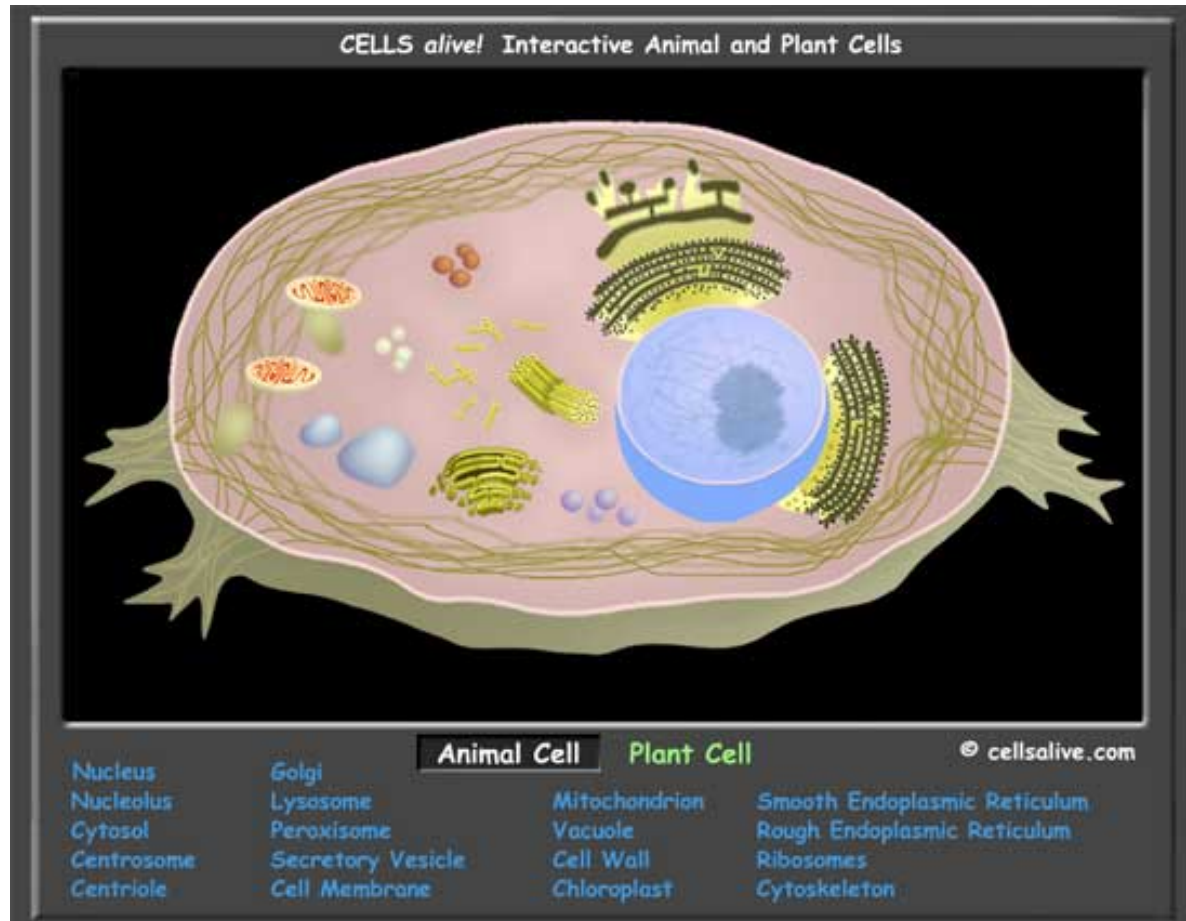


Reasoning skills and additional ideas required should be reasonable

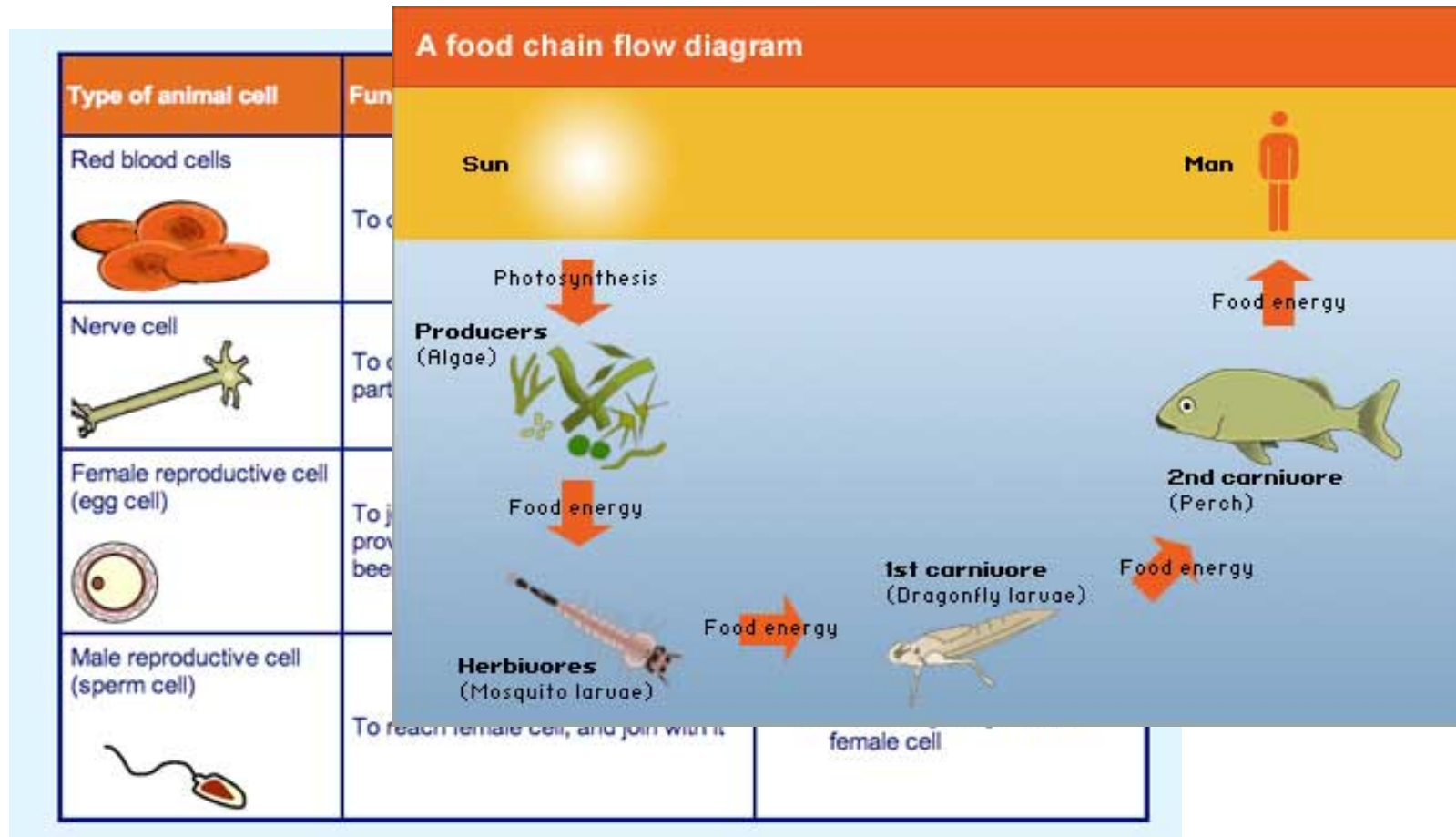
Plants use the energy from light to make sugars from carbon dioxide and water.



Resources should be clear about their simplifications or assumptions



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

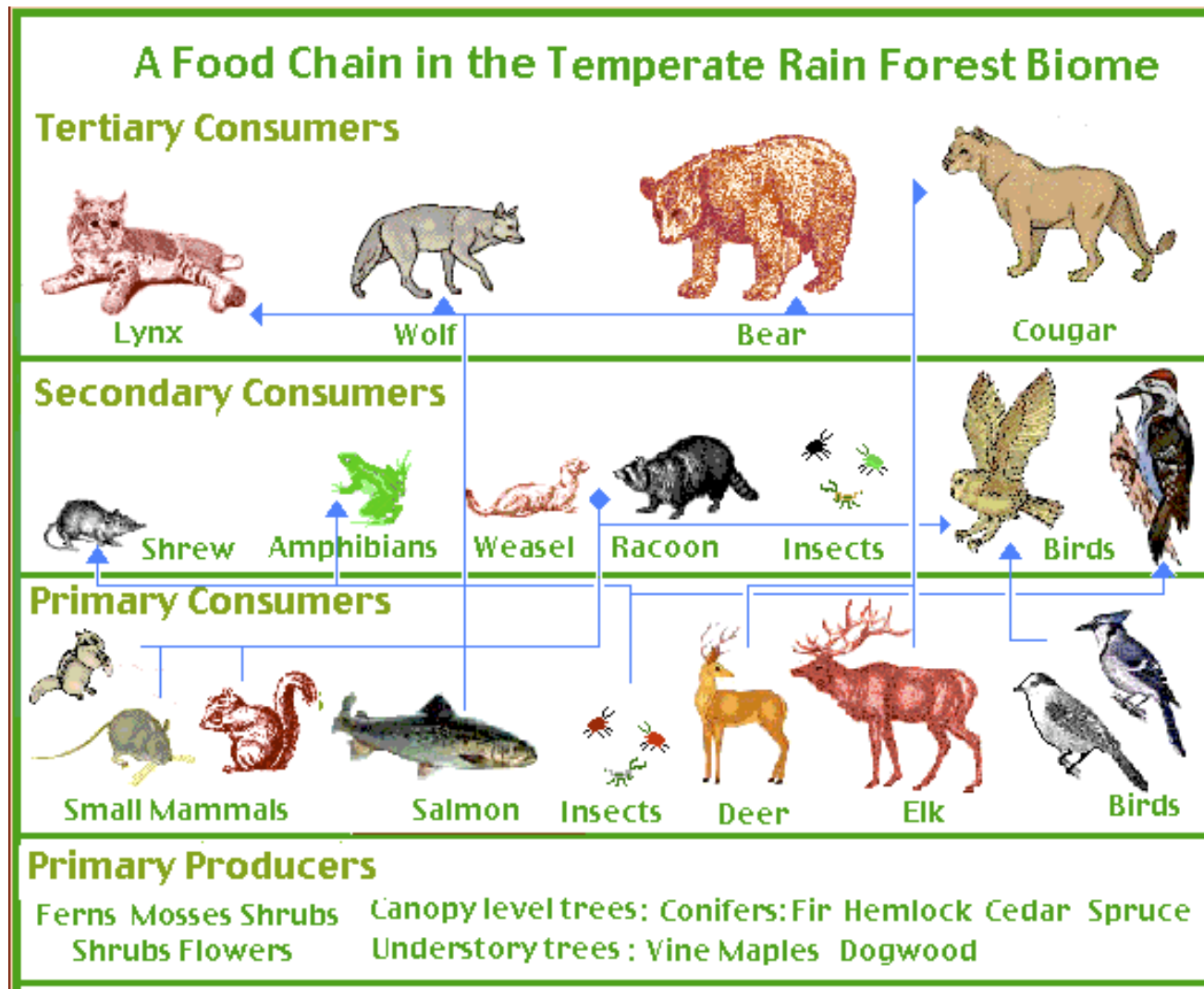
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NSTA WEB SEMINARS

Removing or de-emphasizing vocabulary can improve content alignment



Removing or de-emphasizing vocabulary can improve content alignment

Sophistication

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

PRISMS Home

search

PRISMS Home

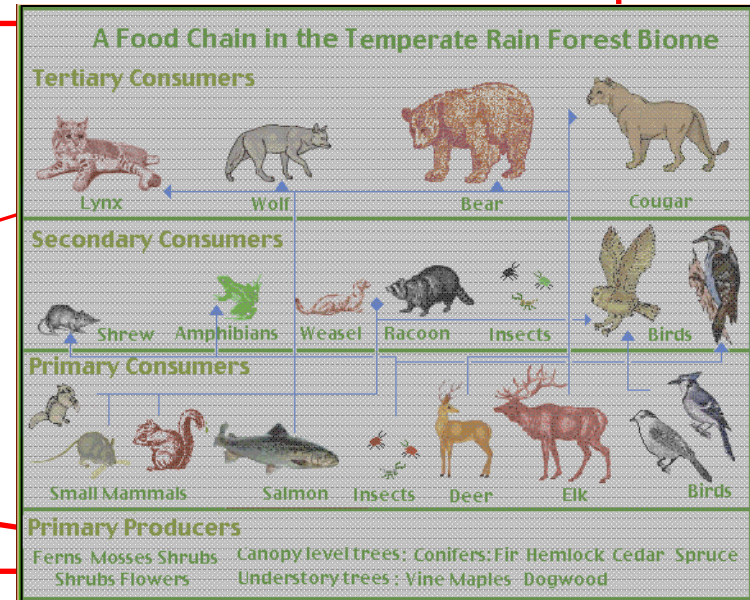
Welcome

PRISMS is a collection of reviewed phenomena and representations for middle school. Our goal is to help increase the amount of content aligned and

Notes for Teachers

To improve alignment, the user can remind students that the specific terms used are not important at this point.

Matter
About PRISMS
Contact Us



Adding instructional supports or classroom experiences may make resources more useful





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. At the base of any food web are organisms that make their own food, followed by the animals that eat them, then the animals that eat those animals, and so forth. 5D/M4**

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.

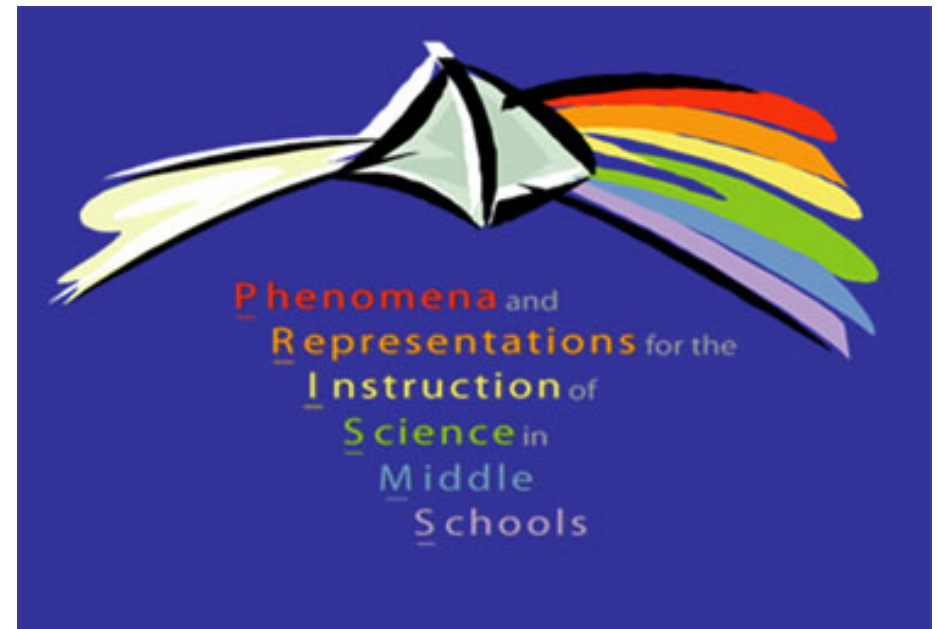
What could you do as a teacher to improve the content alignment of this resource when presenting it to students?

Write your answers on the chat





The PRISMS collection assembles resource reviews as part of the NSDL



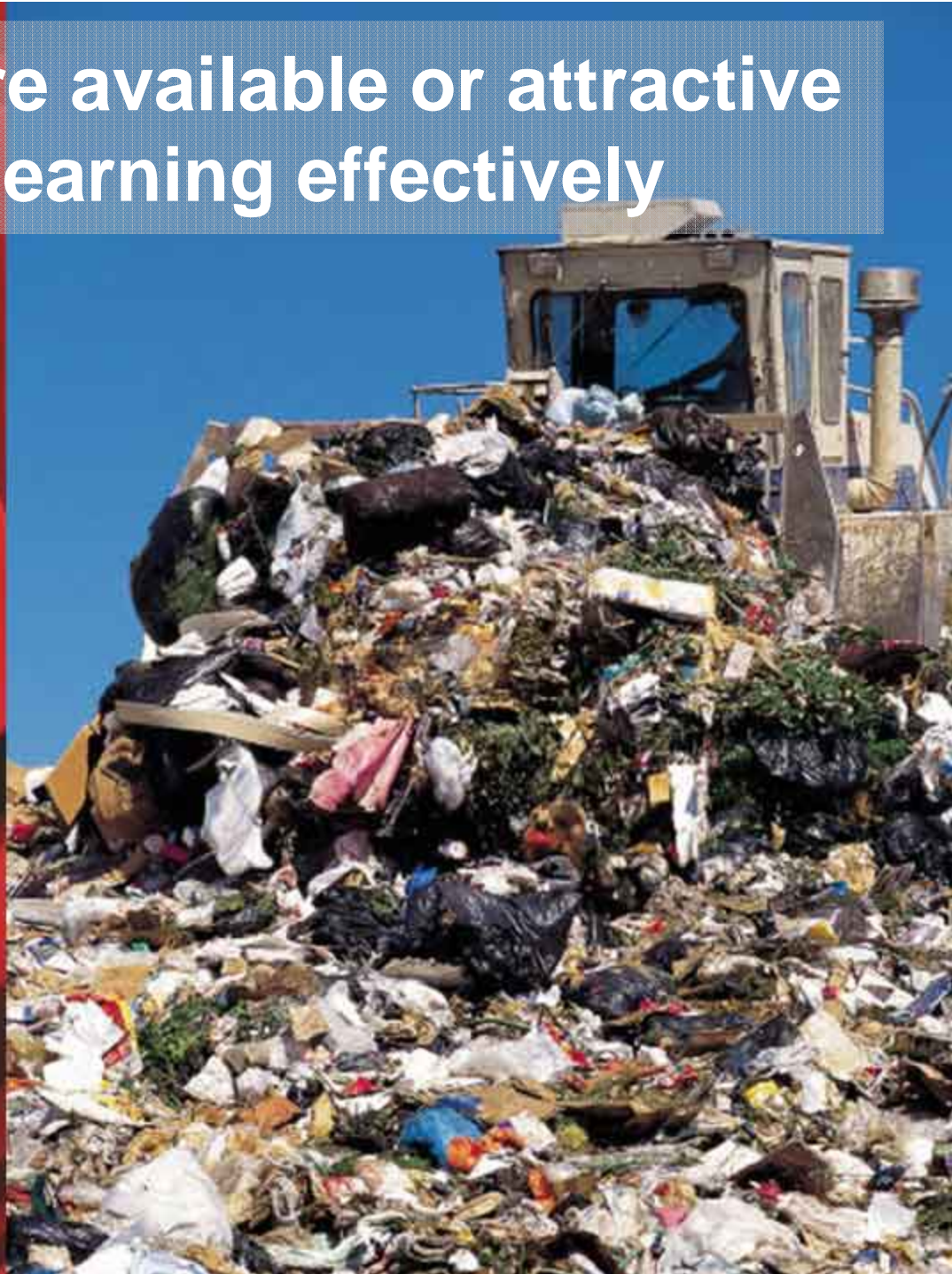
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Can we find online resources that promote learning effectively?



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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Maine
MATHEMATICS
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April 9, 2008

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Click on the URL located on the
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