NSTA Web Seminar:
Intro to the Atlas of Science Literacy

Tuesday, November 18, 2008
Using Atlas of Science Literacy

Ted Willard
Familiarity with the Atlas

How familiar are you with the Atlas of Science Literacy?

A. This is the first time I have heard of it.
B. I’ve heard of it, but never seen it.
C. I’ve seen it, but I don’t own it
D. I own it, but I don’t know how to use it.
E. I own it and use it.
Familiarity with the Atlas

How familiar are you with the Atlas of Science Literacy?

A. This is the first time I have heard of it.
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D. I own it, but I don’t know how to use it.
E. I own it and use it.
Access to the Atlas

How familiar are you with the Atlas of Science Literacy?

A. I have a copy of Atlas 1 and Atlas 2 with me right now.
B. I have Atlas 1 with me, but not Atlas 2.
C. I have Atlas 2 with me, but not Atlas 1.
D. I have copies of one or more maps with me right now.
E. The only maps I will see tonight are the ones you show me on the screen.
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The Need for Change
The Need for Change

• Curricula often focus on quickly forgotten details and terms rather than the understanding of major concepts and processes.

• Helping students achieve a clear understanding of ideas is extremely difficult.

• Students (even the best and the brightest) understand less than we think they do.
For Example…

Consider a Seed and a Log

• Under the right conditions, a maple seed can grow into a maple tree.

• But a maple tree is much bigger and more massive than a maple seed.

• How would your students explain where all of the extra material a maple tree has comes from?
Most living things need water, food, and air.

Plants and animals both need to take in water, and animals need to take in food. In addition, plants need light.

Plants can use the food they make immediately or store it for later use.

One of the most general distinctions among organisms is between plants, which use sunlight to make their own food, and animals, which consume energy-rich foods. Some kinds of organisms, many of them microscopic, cannot be neatly classified as either plants or animals.

Organisms that eat plants break down the plant structures to produce the materials and energy they need to survive. Then they are consumed by other organisms.

Food provides molecules that serve as fuel and building material for all organisms.

Carbon and hydrogen are common elements of living matter.

Air is a material that surrounds us and takes up space and whose movement we feel as wind.

From food, people obtain fuel and materials for body repair and growth.

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

Excerpt from the *Flow of Matter in Ecosystems* Map
A Private Universe

• Look at the benchmarks on the strand map.

• Decide which ones are of particular importance in answering the question.

• While watching the film, think about what level of understanding did the students’ responses demonstrate.

Special thanks to the Science Media Group at the Harvard Smithsonian Center for Astrophysics.
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One of the most general distinctions among organisms is between plants, which use sunlight to make their own food, and animals, which consume energy-rich foods. Some kinds of organisms, many of them microscopic, cannot be neatly classified as either plants or animals.

Food provides molecules that serve as fuel and building material for all organisms.

Plants and animals both need to take in water, and animals need to take in food. In addition, plants need light.
Probing for Understanding

• How do the responses of the Harvard & MIT graduates differ from those of the 4th graders?

• Do the Harvard & MIT graduates seem to have a more sophisticated understanding?

• What ideas have the graduates missed?
Points to Consider

• Science education is not working for most students, even in the best schools.

• Science educators need a coherent set of K-12 learning goals.

• A thorough understanding of science literacy and learning goals is essential for effective teaching and learning.
Let’s Pause for Two Questions
About Project 2061
About Project 2061

- The American Association for the Advancement of Science was founded in 1848. It is the world's largest general science organization and publisher of the peer-reviewed journal Science.
- In 1985 AAAS launched a long-term effort to reform science, mathematics, and technology education for the 21st century,
- Since Halley’s comet was visible in the skies when the project was founded, the name Project 2061 was chosen to mark the year that comet will return.
Project 2061 believes...

- Science literacy is important for **all** students, not only those electing science careers.
- “Science” includes natural science, social science, mathematics, and technology.
- There are no quick fixes.
- Curriculum should cover less material but at greater depth.
- Reform must be structured around powerful, meaningful goals.
Science for All Americans

- Presents the knowledge and skills that make up science literacy goals

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Table of Contents

1. The Nature of Science
2. The Nature of Mathematics
3. The Nature of Technology
4. The Physical Setting
5. The Living Environment
6. The Human Organism
7. Human Society
8. The Designed World
9. The Mathematical World
10. Historical Perspectives
11. Common Themes
12. Habits of Mind
Chapter 4—The Physical Setting
Section B—The Earth

• The cycling of water in and out of the atmosphere plays an important part in determining climatic patterns—evaporating from the surface, rising and cooling, condensing into clouds and then into snow or rain, and falling again to the surface, where it collects in rivers, lakes, and porous layers of rock. There are also large areas on the earth's surface covered by thick ice (such as Antarctica), which interacts with the atmosphere and oceans in affecting worldwide variations in climate.
Benchmarks for Science Literacy

- Provides a set of learning goals for the ends of grades 2, 5, 8, and 12

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Benchmarks Development Team

- 4 years
- 6 teams
  - 25 teachers per team
  - One day (+) each month
  - Six-week Summer Institutes
Benchmarks is based on SFAA
Benchmarks from *BSL* (pages 67-70)

**K-2** Water left in an open container disappears, but water in a closed container does not disappear.

**3-5** When liquid water disappears, it turns into a gas (vapor) in the air and can reappear as a liquid when cooled, or as a solid if cooled below the freezing point of water. Clouds and fog are made of tiny droplets of water.

**6-8** The cycling of water in and out of the atmosphere plays an important role in determining climatic patterns. Water evaporates from the surface of the earth, rises and cools, condenses into rain or snow, and falls again to the surface. The water falling on land collects in rivers and lakes, soil, and porous layers of rock, and much of it flows back into the ocean.

**9-12** Life is adapted to conditions on the earth, including the force of gravity that enables the planet to retain an adequate atmosphere, and an intensity of radiation from the sun that allows water to cycle between liquid and vapor.
Atlas of Science Literacy

- Illustrates the relationships between individual learning goals and shows the growth-of-understanding of ideas
Most Boxes are Based on Benchmarks
But some come from SFAA
and some come from NSES
The earth has a variety of climatic patterns, which consist of different conditions of temperature, precipitation, humidity, wind, air pressure, and other atmospheric phenomena. These result from a variety of factors. Climate and changes in climate have influenced the past and will continue to influence what kinds of life forms are able to exist. Understanding the basic principles that contribute to maintaining and causing changes in weather and climate increases our ability to forecast and moderate the effects of weather and to make informed decisions about human activities that may contribute to climate change.

The map is organized around four strands—temperature and winds, water cycle, atmospheric, and climate change. The progression of understanding begins in the elementary grades with observations about heat transfer, changes in water from one state to another, and changes in weather over the course of a day and over the course of seasons. By middle school, the focus is on the water cycle, patterns of change in temperature, and the notion of climate change. In high school, seasons and winds and the water cycle are related to gravity and the earth's rotation, and climate change is related to natural causes and human activities.

Benchmarks in this map about temperature and winds draw on ideas about heat transfer and transformation in the ENERGIES TRANSFORMATIONS map. Benchmarks in the climate change strand are also related to the SCIENCE AND SOCIETY map. The widespread use of climatic models to improve our understanding of the earth's climate system and climate change suggests a connection to benchmarks in the MODELS map as well.

NOTES
The left-hand side of the temperature and winds strand presents a progression of understanding of seasons. The explanation of the seasons in terms of the tilt of the earth requires students to engage in fairly complex spatial reasoning. For this reason, although the idea is introduced at the 6-8 grade level in Benchmarks, the map places it at the 9-12 level.

Benchmarks related to the heating of materials and the transfer of thermal energy lay the conceptual groundwork for understanding solar heating, global circulation, seasonal weather patterns, and climate, and the effect of greenhouse gases. To understand how thermal energy moves in both oceanic and atmospheric systems, students need to know that convective currents are an essential mechanism that helps to distribute energy. In middle school, understanding of convection currents is linked to experiences with relevant phenomena. Understanding convection in terms of gravity, buoyant forces, and pressure is not expected until high school. It is not necessary for students to have a molecular comprehension of thermal energy to be able to understand atmospheric and oceanic circulation patterns and their role in climate.

Several lines of conceptual development converge in the new 9-12 benchmark that begins with the statement that the earth's seasons result from... These include an understanding of temperature patterns over the earth, atmospheric and oceanic circulation patterns, and the water cycle. A double-headed arrow between this benchmark and another new benchmark (6-8/9-12) on climate change indicates that they are closely related but that neither is conceptually dependent on the other.

RESEARCH IN BENCHMARKS
Students of all ages (including college students and adults) have difficulty understanding what causes the seasons. Students may not be able to understand explanations of the seasons before they reasonably understand the relative sizes, motion, and distance of the sun and the earth (Sadler, 1987; Vickers, 1991). Many students before and after instruction in earth science think that winter is colder than summer because the earth is farther from the sun in winter (Rogers & Reardon, 1996; DeVore, 1998; Phillips, 1991; Sadler, 1998).

The idea is often related to the belief that the earth warms the sun in an elongated elliptical path (Galik & Laski, 1968; Sadler, 1998). Other students, especially after instruction, think that the distance between the northern hemisphere and the sun changes because the earth moves toward the sun in the summer and away from the sun in winter (Galik & Laski, 1996; Sadler, 1998). Students: ideas about how light travels and about the earth-sun relationship, including the shape of the earth's orbit, the period of the earth's revolution around the sun, and the period of the earth's rotation around its axis, may interfere with students' understanding of the seasons (Galik & Laski, 1996; Sierra, 1995; Stein, 1998; Stein, 1999). For example, some students believe that the side of the sun not facing the earth experiences winter, indicating a misinterpretation between the daily rotation of the earth and its annual revolution around the sun (Stein, 1995; Stein, 1998).

Although upper elementary school students may identify an air mass as existing over a static situation and recognize that it takes space, recognizing that air has weight may be challenging even for high school students (Green, 1995; Domin et al., 1995; Vickers, 1995). Students of all ages (including college students) may believe that air exerts force on pressure only when it is moving and only because of wind (Dominy et al., 1995; Green, 1995). Although air pressure differences between regions of the atmosphere account for wind, students may account for winds in terms of visible moving objects or the movement of the earth (Diver et al., 1994a).

Before students understand that water is converted to an invisible form, they may initially believe that when water evaporates, it ceases to exist, or that it changes location but remains a liquid, or that it is transformed into some other perceptible form (cloud, steam, droplets, etc.) (Beauchamp, 1999; Buell et al., 1999). Students of all ages, including college students, may believe that air exerts force on pressure only when it is moving and only because of wind (Diver et al., 1994a). However, students must first accept air as a permanent substance (Beauchamp, 1999). For many students, difficulty understanding the existence of water vapor in the atmosphere persists in middle school years (Lee et al., 1992; Johnson, 1998). Students can understand rainfall in terms of gravity once they attribute weight to little drops of water (typically in upper elementary grades), but the mechanism through which condensation occurs may not be understood until high school (Beauchamp, 1999).

Students of all ages may confuse the ozone layer with the greenhouse effect, and may tend to imagine that all environmentally friendly actions help to solve all environmental problems. For example, that the use of unleaded petrol reduces the risk of global warming (Anderson & Walls, 2000; Kukla & Close, 1998; Meunier & Winer, 1999; Pielke, 1984; Winer, 1997). Students may not be able to understand explanations of the seasons before they reasonably understand the relative sizes, motion, and distance of the sun and the earth (Sadler, 1987; Vickers, 1991). Many students before and after instruction in earth science think that winter is colder than summer because the earth is farther from the sun in winter (Rogers & Reardon, 1996; DeVore, 1998; Phillips, 1991; Sadler, 1998).

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Distribution of Benchmarks

- 25% Only in *Atlas 1*
- 32% Only in *Atlas 2*
- 43% In both *Atlas 1 & 2*
4 The Physical Setting

- Solar System (4A)
- Stars (4A)
- Galaxies and the Universe (4A)
- Changes in the Earth’s Surface (4C)
- Plate Tectonics (4C)
- Atoms and Molecules (4D)
- Conservation of Matter (4D)
- States of Matter (4D)
- Chemical Reactions (4D)
- Laws of Motion (4F)
- Waves (4F)
- Gravity (4G)
4 The Physical Setting

- Solar System (4A)
- Stars (4A)
- Galaxies and the Universe (4A)

- Changes in the Earth’s Surface (4C)
- Plate Tectonics (4C)
- Atoms and Molecules (4D)
- Conservation of Matter (4D)
- States of Matter (4D)
- Chemical Reactions (4D)

- Laws of Motion (4F)
- Waves (4F)
- Gravity (4G)
4 The Physical Setting

- Solar System (4A)
- Stars (4A)
- Galaxies and the Universe (4A)
- Weather and Climate (4B)
- Use of Earth’s Resources (4B)
- Changes in the Earth’s Surface (4C)
- Plate Tectonics (4C)
- Atoms and Molecules (4D)
- Conservation of Matter (4D)
- States of Matter (4D)
- Chemical Reactions (4D)
- Energy Transformations (4E)
- Laws of Motion (4F)
- Waves (4F)
- Gravity (4G)
- Electricity and Magnetism (4G)
4 The Physical Setting

- Solar System (4A)
- Stars (4A)
- Galaxies and the Universe (4A)
- **Weather and Climate** (4B)
- **Use of Earth’s Resources** (4B)
- Changes in the Earth’s Surface (4C)
- Plate Tectonics (4C)
- Atoms and Molecules (4D)
- Conservation of Matter (4D)
- States of Matter (4D)
- Chemical Reactions (4D)
- **Energy Transformations** (4E)
- Laws of Motion (4F)
- Waves (4F)
- Gravity (4G)
- **Electricity and Magnetism** (4G)
Benchmarks Online Updated

Since we have revised some of the benchmarks, we have released an updated version of *Benchmarks Online*.
Supporting the Goals

Curriculum

Instruction

Materials Development

Teacher Preparation

Assessment

Literacy Goals

Learning Goals

Connections
Let’s Pause for Two Questions
Boxes on Maps
Map Key

- **Benchmarks**
  - Indicate specific learning goals derived from benchmarks for science literacy, but also from Science for All Americans and National Science Education Standards. Colored boxes indicate knowledge goals, bordered boxes indicate skill goals. Some benchmarks have been split into two or more ideas which appear in separate boxes. (See page 61.)

- **Circles**
  - Indicate a sequence or relationship between benchmarks. (See page 4.)

- **Off-Map Connections**
  - Show links to access the full text of the benchmarks on a map. Areas in off-map connections show links to other maps on which a benchmark appears in its full text. (See page 11.)

- **Cross-References to Other Maps**
  - Indicate that the benchmark also appears on the maps that are listed. (See page 14.)

- **Strand Labels**
  - Help the reader find things in the map and get a sense of the map’s content. Strands loosely suggest ideas or skills that develop over time. Strands often intersect and share benchmarks. (See page 80.)

- **Gauge Ranges**
  - Suggest when most students could achieve these benchmarks. A benchmark position within a grade range does not indicate the grade in which it should be taught, nor does its position indicate that it should be taught before or after another benchmark unless there is an arrow connecting them. (See page vii.)

- **Benchmark Codes**
  - Indicate chapters, sections, etc., and the full text of the corresponding goal statement in Benchmarks for Science Literacy. Letters, asterisks, and acronyms following the code provide additional information about the benchmark. (See page 61.)

- **Connecting Arrows**
  - Indicate that achieving one benchmark contributes to achieving another. The exact meaning of connections is not indicated explicitly, but connections can be based on the logic of the subject matter or on cognitive research about how students learn. (See page 80.)
Map Key

BENCHMARKS are specific learning goals derived mostly from *Benchmarks for Science Literacy* but also from *Science for All Americans* and *National Science Education Standards*. Colored boxes indicate knowledge goals; bordered boxes indicate skill goals. Some benchmarks have been split into two or more ideas which appear in separate boxes.
Map Key

**BENCHMARK CODES** indicate chapter, section, grade range, and number of the corresponding goal statements in *Benchmarks for Science Literacy*.

Letters, asterisks, and acronyms following the code provide additional information about the benchmark.
What’s in a Benchmark Code?

Chapter in *Benchmarks*

Section in *Benchmarks*

Grade Range in *Benchmarks*
- H = High school (9-12)
- M = Middle school (6-8)
- E = Elementary school (3-5)
- P = Primary school (K-2)

Benchmark in the grade range

Sentence in a benchmark
- a = first sentence
- b = second sentence
- c = third sentence and so on

Status of a benchmark
- * = edited
- ** = new

Source of a new benchmark
- SFAA = Science for All Americans
- NSES = National Science Education Standards
- BSL = Benchmarks for Science Literacy
- ASL = Atlas of Science Literacy, Volume 1
What’s in a Benchmark Code?

- Chapter in Benchmarks
- Section in Benchmarks
- Grade Range in Benchmarks:
  - H = High school (9-12)
  - M = Middle school (6-8)
  - E = Elementary school (3-5)
  - P = Primary school (K-2)
- Benchmark in the grade range
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  - M = Middle school (6-8)
  - E = Elementary school (3-5)
  - P = Primary school (K-2)
- Benchmark in the grade range
  - 1B/M1b*
  - 12A/H4** (SFAA)
- Sentence in a benchmark
  - a = first sentence
  - b = second sentence
  - c = third sentence and so on
- Status of a benchmark
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What’s in a Benchmark Code?

**Chapter in Benchmarks**
- **Section in Benchmarks**
  - **Grade Range in Benchmarks**
    - H = High school (9-12)
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**BENCHMARK IN THE GRADE RANGE**

```
1B/M1b*  12A/H4**(SFAA)
```

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- a = first sentence
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Chapter in Benchmarks

Section in Benchmarks

Grade Range in Benchmarks
H = High school (9-12)
M = Middle school (6-8)
E = Elementary school (3-5)
P = Primary school (K-2)

Benchmark in the grade range

1B/M(b*)
12A/H4**(SFAA)

Sentence in a benchmark:
b = first sentence
b = second sentence
c = third sentence and so on

Status of a benchmark:
* = edited
** = new

Source of a new benchmark:
SFAA = Science for All Americans
NSE = National Science Education Standards
BSL = Benchmarks for Science Literacy
ASL = Atlas of Science Literacy, Volume 1
What’s in a Benchmark Code?

Chapter in Benchmarks

Section in Benchmarks

Grade Range in Benchmarks
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- M = Middle school (6-8)
- E = Elementary school (3-5)
- P = Primary school (K-2)

Benchmark in the grade range

1B/M1

Status of a benchmark
- * = edited
- ** = new

Source of a new benchmark
- SFAA = Science for All Americans
- NSES = National Science Education Standards
- BSL = Benchmarks for Science Literacy
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What’s in a Benchmark Code?

Chapter in Benchmarks

Section in Benchmarks

Grade Range in Benchmarks
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Benchmark in the grade range

1B/M1b*  12A/H4** (SFAA)

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- a = first sentence
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Let’s Pause for Two Questions
Arrows on Maps
Map Key

CONNECTING ARROWS indicate that achieving one benchmark contributes to achieving the other. The exact meaning of a connection is not indicated explicitly, but connections can be based on the logic of the subject matter or on cognitive research about how students learn.
What does an Arrow mean?

- One idea “contributes to the understanding of the other”

- Knowing one idea can be “helpful in learning” the other idea.

- The idea may be an essential prerequisite, but does *not* have to be.
Is there a connection?
If yes, which way does it run?

A
Air is a substance that surrounds us, takes up space, and whose movements we feel as wind.

B
Air is a substance that surrounds us, takes up space, and whose movements we feel as wind.

C
When liquid water disappears, it turns into a gas (vapor) in the air and can reappear as a liquid when cooled, or as a solid if cooled below the freezing point of water. Clouds and fog are made of tiny droplets of water.

No Arrow
When liquid water disappears, it turns into a gas (vapor) in the air and can reappear as a liquid when cooled, or as a solid if cooled below the freezing point of water. Clouds and fog are made of tiny droplets of water.

When liquid water disappears, it turns into a gas (vapor) in the air and can reappear as a liquid when cooled, or as a solid if cooled below the freezing point of water. Clouds and fog are made of tiny droplets of water.

Air is a substance that surrounds us, takes up space, and whose movements we feel as wind.
Is there a connection? If yes, which way does it run?

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<td>Changes in speed or direction of motion are caused by forces.</td>
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<td>Changes in speed or direction of motion are caused by forces.</td>
<td>An unbalanced force acting on an object changes its speed or direction of motion, or both.</td>
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The sun warms the land, air, and water. 4E/P1

When liquid water disappears, it turns into a gas (vapor) in the air and can reappear as a liquid when cooled, or as a solid if cooled below the freezing point of water. Clouds and fog are made of tiny droplets or frozen crystals of water. 4B/E3*

Water can be a liquid or a solid and can go back and forth from one form to the other. If water is turned into ice and then the ice is allowed to melt, the amount of water is the same as it was before freezing. 4B/P2

When warmer things are put with cooler ones, heat is transferred from the warmer ones to the cooler ones. 4E/E2b*

The weather is always changing and can be described by measurable quantities such as temperature, wind direction and speed, and precipitation. Large masses of air with certain properties move across the surface of the earth. The movement and interaction of these air masses is used to forecast the weather. 4B/E5** (NSES)

The temperature and amount of rain (or snow) tend to be high, low, or medium in the same months every year. 4B/P1*

Water left in an open container disappears, but water in a closed container does not disappear. 4B/P3

Air is a material that surrounds us and takes up space and whose movement we feel as wind. 4B/E4*

A warmer object can warm a cooler one by contact or at a distance. 4E/E2c

The movement and interaction of these air masses is used to forecast the weather. 4B/E5** (NSES)

Change is something that happens to many things. 4C/P2

Draw arrows between benchmarks where it seems appropriate to do so.
Let’s Pause for Two Questions
Using Strand Maps
Uses of Strand Maps

How would you use a strand map?

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</table>
Uses of Strand Maps

- Understanding Benchmarks
- Designing Curriculum
- Planning Instruction
- Developing and Evaluating Curriculum Materials
- Constructing and Analyzing Assessment
- Preparing Teachers
- Organizing Resources
Uses of Strand Maps

- **Understanding Benchmarks** Maps help clarify the meaning of individual benchmarks and get a sense of what the benchmarks as a set are trying to achieve.

- Designing Curriculum
- Planning Instruction
- Developing and Evaluating Curriculum Materials
- Constructing and Analyzing Assessment
- Preparing Teachers
- Organizing Resources
Uses of Strand Maps

- **Understanding Benchmarks**

- **Designing Curriculum**  Maps can help educators establish the responsibilities of different grades and subjects in growth toward literacy to ensure the cumulative effectiveness of instruction.

  - **Planning Instruction**
  - **Developing and Evaluating Curriculum Materials**
  - **Constructing and Analyzing Assessment**
  - **Preparing Teachers**
  - **Organizing Resources**
Uses of Strand Maps

- Understanding Benchmarks
- Designing Curriculum

**Planning Instruction** Maps can help educators focus on what aspects of a particular benchmark are important for later learning. They also help identify what earlier conceptual understandings a struggling students might be missing.

- Developing and Evaluating Curriculum Materials
- Constructing and Analyzing Assessment
- Preparing Teachers
- Organizing Resources
Uses of Strand Maps

- Understanding Benchmarks
- Designing Curriculum
- Planning Instruction

- Developing and Evaluating Curriculum Materials  Maps offer materials developers a helpful perspective on what benchmarks to target when and can help them target the ideas in specific benchmark, rather than just in the general topic, at the appropriate level of sophistication.

- Constructing and Analyzing Assessment
- Preparing Teachers
- Organizing Resources
Uses of Strand Maps

- Understanding Benchmarks
- Designing Curriculum
- Planning Instruction
- Developing and Evaluating Curriculum Materials

- Constructing and Analyzing Assessment Maps can help answer questions about when it is appropriate to assess particular ideas and skills, and why students might have trouble with a particular task.

- Preparing Teachers
- Organizing Resources
Uses of Strand Maps

- Understanding Benchmarks
- Designing Curriculum
- Planning Instruction
- Developing and Evaluating Curriculum Materials
- Constructing and Analyzing Assessment

- **Preparing Teachers** In both pre-service and in-service situations, teachers report that studying maps improves their own understanding of a topic, what their students are expected to learn in that topic, and how their students can attain that understanding.

- Organizing Resources
Uses of Strand Maps

- Understanding Benchmarks
- Designing Curriculum
- Planning Instruction
- Developing and Evaluating Curriculum Materials
- Constructing and Analyzing Assessment
- Preparing Teachers

- **Organizing Resources** Maps have proved to be very useful as a tool for browsing resources in digital libraries.
Users Select the Map They Want
Users Select the Map They Want
Click on a Benchmark
A list of Resources Will Pop Up
The Digital Libraries Pick the Resources
Let’s Pause for Two Questions
Thank You!
Thanks to our presenter, Ted Willard, and to the AAAS for sponsoring this program.
The NSTA Learning Center

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 tools help you organize, personalize, and document your growth over time.

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- College

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