SECTION 9b

Conservation of Energy: Absorption

Student Pages

Design Plan for Solar Homes
Student Data Form

List the one changed (manipulated) variable:	List the most important logical steps; include all the different variables and their amounts:
List the variables you will keep the same or constant (controlled variables):	List the most important materials:
List the variable you will measure and/or observe (measured/observed or responding variable):	
How often and/or how many times will you measure and/or observe it?	
Make a table for recording the data. Repeat the tests/procedure at least 3 times.	

Adapted from: 2007 by Betsy Rupp Fulwiler from Writing in Science. Portsmouth, NH: Heinemann

Designing a Structure: Solar Home Design and Construction

CATEGORY	4	3	2	1
Plan	Plan is neat with clear measurements and labeling for all components.	Plan is neat with clear measurements and labeling for most components.	Plan provides clear measurements and labeling for most components.	Plan does not show measurements clearly or is otherwise inadequately labeled.
Construction - Materials	Appropriate materials were selected and creatively modified in ways that made them even better.	Appropriate materials were selected and there was an attempt at creative modification to make them even better.	Appropriate materials were selected.	Inappropriate materials were selected and contributed to a product that performed poorly.
Data	Data taken several times in a careful, reliable manner.	Data taken twice in a careful, reliable manner.	Data taken once in a careful, reliable manner.	Data not taken carefully OR not taken in a reliable manner.
Scientific Knowledge	Explanations indicate a clear and accurate understanding of the concepts of light energy.	Explanations indicate a relatively accurate understanding of the concepts of light energy.	Explanations indicate relatively accurate understanding of the concepts of light energy.	Explanations do not illustrate much understanding of the concepts of light energy.

Building a Structure: Solar Home Design and Construction

CATEGORY	4	3	2	1
Plan	Plan is neat with clear measurements and labeling for all components.	Plan is neat with clear measurements and labeling for most components.	Plan provides clear measurements and labeling for most components.	Plan does not show measurements clearly or is otherwise inadequately labeled.
Construction - Materials	Appropriate materials were selected and creatively modified in ways that made them even better.	Appropriate materials were selected and there was an attempt at creative modification to make them even better.	Appropriate materials were selected.	Inappropriate materials were selected and contributed to a product that performed poorly.
Construction - Care Taken	Great care taken in construction process so that the structure is neat, attractive and follows plans accurately.	Construction was careful and accurate for the most part, but 1-2 details could have been refined for a more attractive product.	Construction accurately followed the plans, but 3-4 details could have been refined for a more attractive product.	Construction appears careless or haphazard. Many details need refinement for a strong or attractive product.
Data	Data taken several times in a careful, reliable manner.	Data taken twice in a careful, reliable manner.	Data taken once in a careful, reliable manner.	Data not taken carefully OR not taken in a reliable manner.
Scientific Knowledge	Explanations indicate a clear and accurate understanding of the concepts of light energy.	Explanations indicate a relatively accurate understanding of the concepts of light energy.	Explanations indicate relatively accurate understanding of the concepts of light energy.	Explanations do not illustrate much understanding of the concepts of light energy.

Concept Definition Map

(Use for vocabulary or concept terms)

LIGHT

EXAMPLES	What is it like?

What is it?

Write definition in your own words.

Note to teacher:

Concept definition mapping is a vocabulary activity that provides students with a graphic organizer that outlines the key parts of a definition (class/category, properties/characteristics, and examples/illustrations). Students are guided into considering the questions that a complete definition should answer: "What is it like?" "What are some examples of it?" and "What is it?"

Students could work in pairs using information from the textbook, class notes, reading passages, background knowledge, and other print sources.

Students should summarize statements forcing them to write the definitions in their own words. This activity will also help students make connections between background knowledge and new learning.

This could be done for each vocabulary word or for variety the teacher could choose to use the vocabulary map on next page.

The idea is to get the students to think beyond the definitions in the glossary.

REFLECTION LOG

LESSON TITLE:

PRE-LESSON

Write two or three questions you hope will be answered.

Write the open-ended question/questions given to you by your instructor.

POST-LESSON

1) What new knowledge did you gain today?

2) List three things from today's lesson that will be most helpful to you?

3) Check your pre-lesson questions. Write the answer those questions that were answered. Ask the other questions during class discussion.

Light

Human Concept Map - Page 1 of 6

Sources of

Reflection

Human Concept Map - Page 2 of 6

Absorption

Refraction

Human Concept Map - Page 3 of 6

The Sun

Artificial/ Man Made

(lamps, flashlights, fire)

Produces Heat

or other forms of energy

Human Concept Map - Page 4 of 6

Light rays are drawn in and stay in the object

Light rays bounce off

Human Concept Map - Page 5 of 6

Caused by light ray changing speed

Bending of light rays changes direction of the light ray

Human Concept Map - Page 6 of 6