Introduction to Solar Heat Energy

Re-Energy
Activity
Grade Level 8-12

Learning Outcomes

By the end of this activity, learners will:

- Understand how solar heat can be harnessed for energy
- Identify applications of solar heat energy in daily life

Curriculum Connections

Alberta

Science 7: Heat and Temperature
Science 9: Electrical Principles and Technologies
Science 10: Energy Flow in Technological Systems
Science 14: Understanding Energy Transfer Technologies
Science 24: Understanding Common Energy Conversion Systems
Science 30: Energy and the Environment (D1.4, D1.5k D1.3s, D2.3k, D2.4k, D2.1sts, D2.3s, D2.4s)

Ontario

Science & Technology 6: Electricity and Electrical Devices (1.1)
Science & Technology 7: Heat in the ≈ (1.2)
Science 9: The Characteristics of Electricity (Academic) (E1.2)

- Electrical Applications (Applied) (1.1)

Environmental Science 11: Scientific Solutions to Contemporary Environmental Changes (U/C Preparation) (B1.2)
Electricity and Magnetism (F1.2)
Physics 12: Energy Transformation (E1.1, E1.2)
Chemistry 12: Energy Changes and Rates of Reactions (D1.1)

Materials Required

Internet-enabled device
Introduction to Solar Heat Backgrounder

Length of Activity

1 hour

Procedure

Step 1: Distribute and review the Solar Heat Backgrounder.

Step 2: In groups or individually, discuss the following questions:

1. What are some of the advantages of using sunlight as a source of energy compared to other sources, such as coal or nuclear energy?
2. What two forms of energy are most commonly produced using sunlight?
3. How does a solar home work?
4. List all the ways you and your family use solar energy. Include any solar-powered appliances you may have in your home.

Step 3: Continute to watch the video on building a passive house and complete the activity below:

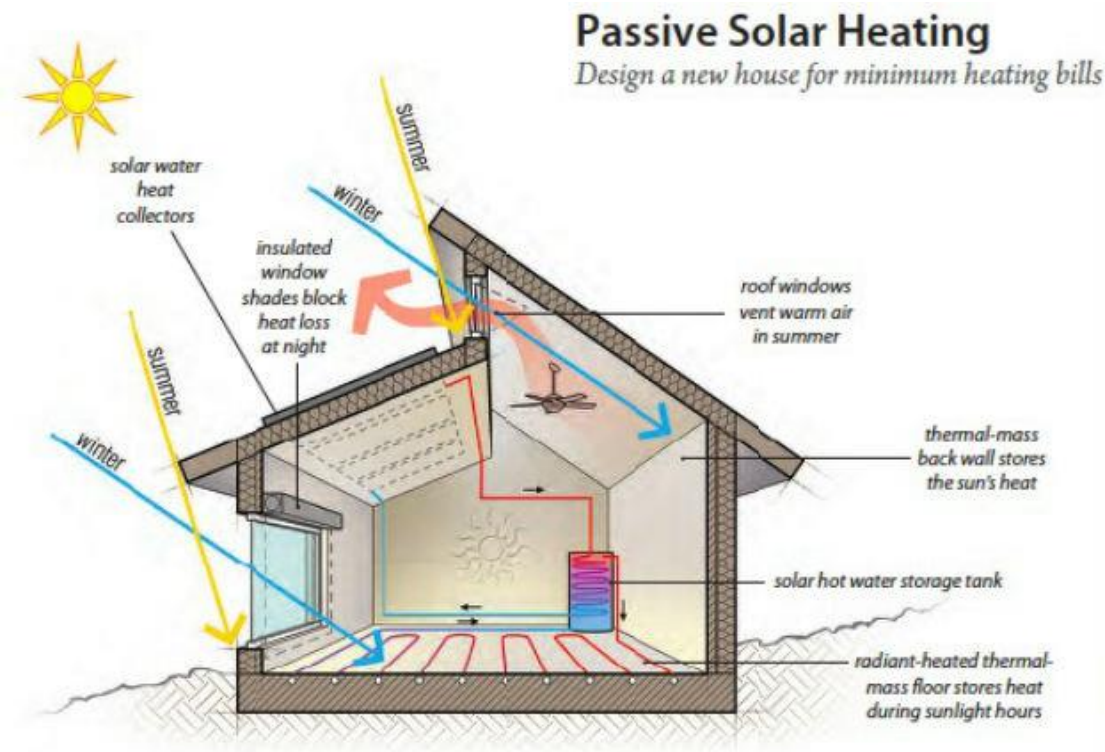
- "Passive House = 90% Home Energy Reduction!" https://www.youtube.com/watch?v=Hz6qomFM_dw

After watching the video, answer the following questions:

- What are the 5 green building techniques covered in the video?
- What is the potential energy savings achieved by designing a passive house compared to a traditional home?
- Can you research any buildings in your vicinity that are built green? What are some of their features that are covered in this video?

Extension Activity

- Have learners review the "Home Heating" section in the Solar Heat Backgrounder to build a model of a solar home.
- Using the points covered in step 3, write down all possible design components that can be utilized to build a passive home that efficiently captures sun's energy. List the ideas on a whiteboard/smartboard or on chart paper.
- Give learners some time to research more information on passive solar heating. Using the list, add or revise the original ideas based on their research findings.
- In small groups, have learners build a model of a solar home and test its efficiency by placing it near a window. By comparing the design features of their models, learners can learn how passive solar heating works. Send us a photo of the model by emailing programs@greenlearning.ca using the subject 'Re-Energy Program"!



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