



WEATHERIZATION

TOPIC OF STUDY

Weatherization



90 MINUTES

KEY TERMS

air sealing
building science
house as a system
insulation
retrofit
stack effect
weatherization

LESSON

Introduction to the Weatherization Process

BIG IDEA(S)

Weatherization is the process of reducing energy consumption and increasing comfort in buildings by improving energy efficiency.

TASK LIST SUBCATEGORY

- 102 Describe how energy is fundamental to our everyday lives
- 104 Describe sources and uses of energy
- 809 Use industry vocabulary

OVERVIEW

Weatherization is a process that requires analysis of buildings in order to decide the best ways to safely provide energy saving measures, requiring familiarity with older and existing building technologies that need to be fixed to be healthier, more comfortable and energy efficient. This is a money saver, especially for lower income households. For buildings that will use solar power for energy, it means using the solar energy efficiently. The guiding principle in all of the weatherization curriculum is that a house is a system where any part that is changed affects the rest of the house.

STANDARDS

PA/SDP

3.2.10.B6. Explain how behavior of matter and energy follow predictable patterns that are defined by laws.

DEFINITIONS OF KEY TERMS

Air sealing: the process of making a home more airtight by sealing up small or big gaps, cracks, and holes.

Building science: using modern technology to study construction, maintenance, safety and durability

House as a system: components of a building are connected to each other and form a single system; conditions in one part of the home affect conditions in another part of the home.

Insulation: helps keep warm and cool air from leaving and entering the home by preventing heat loss

Retrofit: weatherization of existing older homes (as opposed to new construction)

Stack effect: warm air rises and creates a positive pressure zone in the top part of the home and a negative pressure zone in the lower part.





DEFINITIONS OF KEY TERMS (CONTINUED)

Weatherization: the process of reducing energy consumption and increasing energy efficiency of the building

INSTRUCTIONAL

TEXT/REFERENCES

Training Handbook, pp. 7-12

MATERIALS NEEDED

Content: Year 1 Lesson 3 Worksheet

Technology: Device with internet to watch YouTube video



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IMPLEMENTATION (LESSON PLAN)

ENGAGE

- Using think-pair-share method ask the class to reflect on the following question: *What does weatherization mean?* Teacher can list student responses on the board or a shared Google doc. Responses might include: protecting something from weather, keeping the weather out of a building, making repairs to fix drafts, etc.

EXPLORE

- At the front of the classroom display a collection of air sealing and insulation products including various types of spray foam, caulks, weather stripping, insulation and foam board.
- While using proper PPE, ask students to come up and observe/inspect the items. In their notebooks ask students to record each item and write a one-sentence description of each item's purpose. Optional: have students classify the items as either air sealing or insulation.

EXPLAIN

- Working in pairs have students complete Year 1 Lesson 2 Worksheet, completing the questions and diagram. As a whole class have students report out on their answers.

EXTEND/EVALUATE

- Introduce the concept of "House as a System" by showing the video "Tale of Weatherization at Grandma's House": <https://homeenergysaver.ning.com/video/a-tale-of-weatherization-at-grandma-s-house>

HOMEWORK

Identify one area of your home that could benefit from a weatherization measure. In your notebook write a 1-2 sentence description of the weatherization measure and explain why that is the best solution.

RESOURCES/LINKS

A Tale of Weatherization at Grandma's House video

<https://homeenergysaver.ning.com/video/a-tale-of-weatherization-at-grandma-s-house>

