LESSON

Building Codes

BIG IDEA(S)

Knowledge of building codes assures safe, structurally sound and energy efficient houses.

OBJECTIVES

Students will:

- Describe the importance for understanding and following codes
- Give examples of local and state code resources
- Describe examples of codes that relate specifically to retrofit installation and house auditing

TASK LIST SUBCATEGORY

313 Explain local ordinances or laws regarding safe transport of materials

404 Describe relevant codes and requirements for permitting and installation

710 Identify the purpose of the National Electrical Code (or any code related to retrofit work

711 Demonstrate how to use the National Electrical Code Book as a referencing guide (or any appropriate code reference like the 2018 Philadelphia Conservation Code)

810 Use energy efficiency industry vocabulary

812 Use appropriate computer technology skills to conduct energy audits and design weatherization plans

OVERVIEW

Installers need to know codes and regulations. Regulatory organizations and codes are numerous and exist at the local, state, national and international levels. Their purpose is to provide installers, builders, architects with rules that assure safe, structurally sound and energy efficient houses. In Philadelphia, the Department of Licenses and Inspections represents the local agency for city government that is responsible for code compliance. Pennsylvania has codes that are provided from a variety of agencies. The local and state codes are often based on widely accepted standards at the national and international level. Discussion of the importance of code and standards is an important concept for Year 1 students.

STANDARDS

PA/SDP

3.4.10.B2. Demonstrate how humans devise technologies to reduce the negative consequences of other technologies.

Construction Career Pathway (AC-CST)

- Describe the approval procedures required for successful completion of a construction project.
- Implement testing and inspection procedures to ensure successful completion of a construction project.

BRIGHT SOLAR FUTURES

WEATHERIZATION

TOPIC OF STUDY

Auditing

90 MINUTES

KEY TERMS

See headings and list of organizations presented in the text.

STANDARDS (CONTINUED)

NGSS

HS-ETS1-2. Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

HS-ETS1-3. Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.

INSTRUCTIONAL

TEXT/REFERENCES

Energy Conservation Handbook, pp. 31-35

MATERIALS NEEDED

Content: Printed Philadelphia Licenses and Inspection weatherization checklist (see supplemental resource); on-line examples of International, national, state and local codes

Techonology: Computer with internet access

IMPLEMENTATION (LESSON PLAN)

1. Introduce the concept of codes: *Codes are like rules. Why is it important to establish rules for work or a game? Why do we have rules in basketball for instance? What happens when rules are broken? What are some examples of people who don't follow the rules?* (Move to the idea of standards, safety, organization, lack of confusion, working together, etc.)
2. Use the categories presented in the text to describe how codes work and are beneficial.
3. Describe examples of organizations that provide codes important to solar and weatherization work at the national, state and local level.
4. Apply the attached checklist to the Dense Pack Insulation Lab (*Energy Conservation Handbook* , pp. 137-142) and identify items that apply to this work.

RESOURCES/LINKS

UpCodes. Philadelphia Energy Conservation Code 2018 (IECC 2018)

https://up.codes/viewer/philadelphia/iecc-2018

This link connects to Philadelphia's code system and references local, state and international codes. It might be helpful to choose one aspect of the codes mentioned in the text for first year students to see one example explored live, such as Thermal Envelope. Scroll down to R402.4.1.1 Installation and check our Air Barrier and Insulation Installation, for example.

Pennsylvania Building Codes (2015)

https://up.codes/viewer/pennsylvania/iebc-2015

Philadelphia Department of Licenses and Inspections, Energy Compliance Materials (checklist in supplemental resources for ease of print out or display).

https://www.phila.gov/documents/energy-compliance-materials/

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