

Green Building Challenge

Produced by [City of Plano Sustainability and Environmental Health Department](#)

STEAM Curriculum Lesson Extension:

Windows to Efficiency, Grade 6

Goal

Students will learn about various strategies and technologies for creating a sustainable building design.

Overview

Students will be taken on a “self-guided” tour of a LEED award-winning building and learn about the various design initiatives that went into its creation. After learning about this, they will have the option to take a quiz to earn additional “coins” to use in the online game as they design their own building.

Connections to EarthX STEAM Curriculum Lesson: *Windows to Efficiency*

Various building materials affect the energy efficiency and thermal transfer of a building in different ways. The interactive Green Building Challenge presents a variety of technologies and strategies that create a highly “green” structure.

Guiding Questions

- If the building you are now in could talk, what grade would it give itself for how “Green” it was, and why?
- What 3 technologies or design features are the best to include when designing a green building? Tell why you think so.
- Can you suggest one change to the building you are in that would allow it to “interact” with nature in a sustainable way (i.e. include nature as a part of the building design.) What advantage(s) would the change have?

Vocabulary

- Passive solar design
- Building envelope
- Insulated concrete forms (ICFs)
- R-Value
- Structural insulated panels (SIPs)
- Low-emissivity (Low-E) windows
- Photovoltaic (PV) cells
- Thermal solar panel
- Heating, ventilation and air conditioning (HVAC)
- Energy recovery ventilation (ERV) system
- Energy Star-rated appliances
- Light-emitting diode (LED) light
- Drip irrigation
- Green infrastructure
- Stormwater
- Permeable parking lot
- Cistern
- Bioswales

Standards

Next Generation Science

- MS-PS3-3
- MS-ETS-1-2
- MS-ETS1-3

TEKS Science Objectives

- 5.b.5a
- 5.b.6a
- 6.b.9a
- 6.b.9b
- 7.b.5
- 8.b.11c