Construction

5.3.1
Unit 5, Lesson 3
Explanation
The Unit Big Idea

The designed world is the product of a design process, which provides ways to turn resources - materials, tools and machines, people, information, energy, capital, and time - into products and services.
The Lesson Big Idea

Construction is the systematic process of erecting structures to meet human needs and desires using specific processes related to available resources.
Construction is divided into four major types:

- Residential
- Industrial
- Commercial
- Public works
Residential construction is the type of construction that builds dwellings that people live in.

- Buildings can be single-family or multifamily dwellings.
- Multifamily units include duplexes, condominiums and townhouses.
  - A duplex is two apartments together under one roof.
  - A townhouse is a two story single unit but usually is arranged beside other similar units.
    - Townhouses are also referred to as row houses.
Industrial construction is building structures designed to meet the specific process requirements of a particular industry.
Commercial construction is building structures for business, grocery stores, shopping malls, restaurants, and office buildings.

Materials and techniques used in commercial construction are different from those used in residential construction.
Public Works construction consist of structures intended for public use such as roadways, bridges, utilities, water, sewage, etc.
Steps in the Construction Process

- Preparing the site
- Setting foundations
- Building the framework
- Enclosing the structure
- Installing utilities
- Finishing the exterior
- Completing the site
Processes & Procedures

- Are based on:
  - Mathematical calculations
  - Scale drawings
Processes & Procedures

- Also based on:
  - Scientific principles (Can you name others?)
  - Electrical; high/low voltage service, Ohm’s Law
  - Plumbing; volume, rates of water flow
  - HVAC; heating and cooling by convection & conduction
Processes & Procedures

- Also based on Availability of resources
  - Material; wood, adobe, timber frame, stone,
  - People; one person to a large crew
  - Equipment; hand tools to large mechanical equipment
Residential Construction Methods

- Wood frame/Timber frame
- Straw bale
- Structural Insulating Panels
- Insulating Concrete Forms
- Adobe/Cob
- Earthship
Research Topics
Construction Methods

- Types of materials needed
- Region of the world where method used
- Special skills/training, permits, etc.
- Basic steps
- Advantages and disadvantages
- Provide images