PLTW Gateway
Green Architecture | Unit Outline

Design a house out of a shipping container?

Students use tools such as the engineering design process, an engineering notebook, and Autodesk® Revit® software to invent and innovate.

Learn how creative thinking and problem solving can change your world!

Today's students have grown up in an age of "green" choices. In the Green Architecture (GA) unit, students learn how to apply this concept to the fields of architecture and construction by exploring dimensioning, measuring, and architectural sustainability as they design affordable housing units using Autodesk® 123D® Design software.

GA Lesson Summary

Lesson 1	Architectural Basics
Lesson 2	Introduction to Sustainable Architecture
Lesson 3	Architectural Challenge

Lesson 1: Architectural Basics
Architecture is the art and science of designing buildings. The basics of architectural design usually address feasibility and cost, as well as function and aesthetics. In this lesson students will learn how to use an architectural scale to accurately measure drawings and read architectural plans. They will learn about planning residential spaces, the different systems in a home, how to read the symbols found in architectural plans, and how to choose materials to remain within a given budget.

Lesson 2: Introduction to Sustainable Architecture
As consumers we are often confronted with lifestyle decisions that could have an impact on our environment. Over the last several years, a lot of emphasis has been placed on going green. In addition to encouraging individuals to change their habits so that the results will be more environmentally friendly, there has also been a push to design buildings to be more green. Sustainable architecture seeks to minimize the negative environmental impact of buildings by enhancing efficiency and moderation in the use of materials, energy, and development space. The goal of sustainability, or ecological design, is to ensure that our actions and decisions today do not inhibit the opportunities of future generations. In this lesson students will become aware of the global challenges of resource depletion and environmental degradation resulting from development and the positive effects of sustainable architecture.

Lesson 3: Architectural Challenge
Autodesk® Revit® Architecture building design software works the way that architects and designers think, which allows the user to develop high-quality, accurate architectural designs. It allows the user to design with both parametric 3D modeling and 2D drafting elements. Built for Building Information Modeling (BIM), Autodesk® Revit® software helps capture and analyze concepts and maintain vision through design, documentation, and construction. In this lesson students will build a wall for a wood framed shed and test insulation materials. They will use the Autodesk® Revit® software to design a sustainable home using shipping containers.