Plan-Relief and Architectural Models

Overview:
Create and compare 2-D floor plans and 3-D models of a classroom.

Materials (per group):
- City or community map or floor plan
- Set of construction toys (e.g., Erector, Lincoln logs, Legos, or K’NEX)
- Graph paper
- Pencils
- Rulers

Objective/Questions:
Learn the difference between a two-dimensional floor plan or map and a model building or architectural model. Create a floor plan of the school or classroom. Create a model of a building or a dollhouse.

Question:
- What is the difference between a map or floor plan and a plan relief or architectural model?

Explorations:
Provide students or teams with a city or community map and a set of construction toys from a commercial provider such as Erector, Lincoln logs, Legos, or K’NEX.

Communication:
Ask the students to describe the differences between the two types of materials. Then, explain that the map or floor plan represents a two-dimensional expression of an area (sometimes called a relief). The Legos or K’NEX can be used to make a three-dimensional model of a building.

Solve:
Using the materials given, instruct students to complete two representations of their classroom or school as follows:
- Draw a floor plan of their classroom or school using graph paper, pencils, and rulers. Special attention should be given to doorways, closets, chalkboards, stairways, windows, and exits. Each
part of the drawing should be labeled, and a scale should be noted at the bottom of the drawing showing the relationship of the drawing to the real world.

- Build a model of their classroom or school using the Erector, Lego, or K’NEX pieces. Paper can be used to draw the outside of the building to show the detail of the structure, and the toy pieces can represent the structural members or support portion of the building.

Encourage each group to produce two different types of models: a plan relief and an architectural.

Test and Record Results:

Have students share their various drawings or structures with the class.

Analyze Results:

Have students discuss the different aspects of the final products and make comparisons between drawings to account for greater or lesser accuracy. Notes should be made on what was left out or what needed to be included to make each drawing more complete. Have students examine each building design and possibly comment on how different structural or support members are needed to support roofs or doorways.

Final Product:

- Give students an opportunity to modify their drawings or models to make them more accurate or complete. You may want to bring in teachers from outside the class and ask them to identify the buildings represented in the structures or floor plans.

- Ask students to explain why there are two ways to represent a building or space. [They should identify that a map is one type of representation, while a building is another.]

Post Activity Reflections:

Ask students to identify how maps and models are used in society. Consider referring to the YOU ARE HERE maps used in malls to help shoppers locate themselves in relation to certain stores or the architectural models used to sell projects and designs to builders and investors. Career options for this activity include becoming a surveyor, an architect, or a city planner.