Explore the History of Modeling

Unit: Physical Model Building in Architectural Design

Problem Area: Physical Model Building

Lesson: Explore the History of Modeling

Student Learning Objectives.

Instruction in this lesson should result in students achieving the following objectives:

1. **Explain the history of a model.**
2. **Describe the role of a model in architectural design.**
3. **List the different types of models used in architectural design.**

List of Resources.

The following resources may be useful in teaching this lesson:

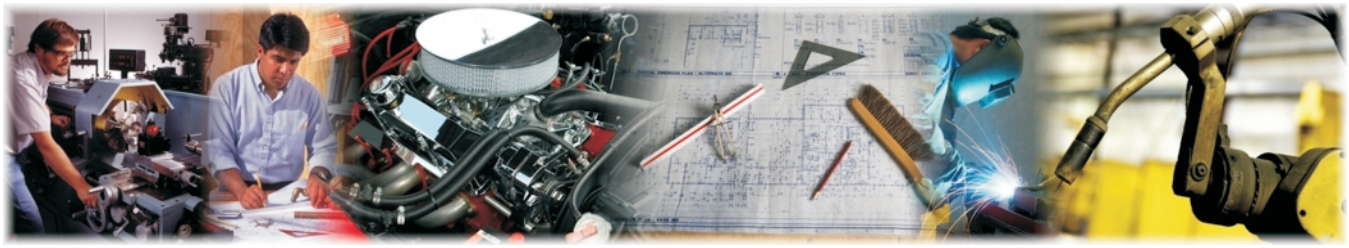
www.architecturalmodel.net. Accessed June 23, 2008. <http://www.architecturalmodel.net>.

"Architecture Technology," Northern Virginia Community College. Accessed June 23, 2008. <http://www.nvcc.edu/home/nsaidi/121/Model/massing/index.htm>.

"Master Builder," University of Colorado. Accessed June 23, 2008. <http://www.colorado.edu/engineering/civil/db/DBS/glossary.cgi?word=Master+Builder>.

Mills, Criss B. *Designing with Models*, 2nd ed. John Wiley & Sons, 2005.

Sutherland, Martha. *Modelmaking*. W.W. Norton, 1999.



List of Equipment, Tools, Supplies, and Facilities

- ✓ Overhead or PowerPoint projector
- ✓ Visual(s) from accompanying master(s)
- ✓ Copies of sample test and/or other items designed for duplication
- ✓ Materials listed on duplicated items
- ✓ Computers with printers and Internet access
- ✓ Classroom resource and reference materials

Terms.

The following terms are presented in this lesson (shown in bold italics):

- concept model
- development model
- function
- large-scale model
- massing model
- master builder
- model
- presentation model
- small-scale model
- space planning
- study model

Interest Approach.

Use an interest approach that will prepare the students for the lesson. Teachers often develop approaches for their unique class and student situation. A possible approach is included here.

> *Ask the students to write a description of a building (e.g., church, house, business) and to create a model for homework. Open the lesson by having them share their creations. Discuss how the models clarify areas that may have been omitted or confusing in the written description.*

SUMMARY OF CONTENT AND TEACHING STRATEGIES

Objective 1: Explain the history of a model.

Anticipated Problem: What is a model?

I. Identifying a model

A. A ***model*** is a scaled representation of an object. Architectural models may include buildings and the built environment.

B. History of a model

1. Early models were used by master builders and masons to study the structural properties of a building. A ***master builder*** was a person who was responsible for the entire project. The responsibilities included the design, engineering, and construction of a project. Today, the master builder role has been divided into different areas of architecture, engineering, and construction.
2. The modern architecture movement used models for education and presentation in 1920 to 1930.
3. Now 3-D models are seen in computer-aided drawings and in traditional models.

Show the students the "Model Gallery" at the following Web site: <http://www.architectural-models.com/>. Ask if any of the students have seen models of hotels, theme parks, or businesses. If they have, ask them to describe what they saw and to explain how or why the models were significant.

Objective 2: Describe the role of a model in architectural design.

Anticipated Problem: Why would a model be used?

II. The role of a model

A. A model may be used to refine a building design by studying the impact the building will have on the site or the function within the building.

1. It is important to study the impact of the size and style of the building on the surrounding area.
2. The light and shadows of a building design should be considered. How does the light highlight or hide the interior and exterior features of the building? Do the interior spaces require a minimum level of natural light?
3. The functions of a building should be studied. A ***function*** refers to the use of a space. The function may refer to a task performed or an object in a space. Dif-

ferent tasks will have different design criteria. For example, an auditorium would be designed differently than a mechanical room.

B. A model may aid in presenting a design to a client or an audience.
   1. A model provides an additional way to illustrate the design. A model enables the client or audience to see a three-dimensional model of the design that may be difficult to express in words.
   2. A model helps market the project by creating an interest in the project.
   3. A model demonstrates how the building functions.
   4. Ask the students for other reasons a model may be used in a presentation.

Use VM–B to illustrate how a model can create interest in a building and aid in a presentation.

Objective 3: List the different types of models used in architectural design.

Anticipated Problem: What types of models should be used?

III. Explain the different types of models. Listed below are three of the main categories.

A. A ***study model*** is a simple model used as a starting point for general building design ideas.
   1. A ***concept model*** is a rough model used to show ideas and concepts for the building design. A concept model is the study of an idea that can be the basis of the building design, not necessarily a scaled model.
   2. A ***massing model*** is a simple scaled model that is used to show the general size and volume of a building.
   3. Space planning can be used to define a massing model. Space planning is a study of how the building functions are arranged in the plan. ***Space planning*** designates an area for a specific object or task in a space. In an office building, the model can be used to show the circulation and furniture in a floor plan. In an industrial park, space planning can be used to determine locations for buildings, green space, parking, and vehicular circulation.

B. A ***development model*** is a large-scale model used to refine massing models. This type of model focuses on a specific part of the building design. For example, in an office building, a development model may focus on the entry canopy.

C. A ***presentation model*** is a refined scale model used to present completed designs to an audience. The presentation model is created from defined plans and elevations.
   1. A ***small-scale model*** is a detailed scale model used to show the overall concept of a design. It may be used to show the detailed exterior of the office building.
   2. A ***large-scale model*** is a detailed scale model used to show a specific area of a design. It is constructed as the design is refined and shows greater detail

than a small-scale model. For instance, the large-scale model may be used to show the details of a door or entry canopy.

Use VM–A through VM–D to illustrate different types of models.

- **Review/Summary.** Use the student learning objectives to summarize the lesson. Have students explain the content associated with each objective. Student responses can be used in determining which objectives need to be reviewed or taught from a different angle. Questions at the ends of chapters in the textbook may also be used in the review/summary.

- **Application.** Use the included visual masters to apply the information presented in the lesson.

- **Evaluation.** Evaluation should focus on student achievement of the objectives for the lesson. Various techniques can be used, such as student performance on the application activities. A sample written test is provided.

Answers to Sample Test:

Part One: Matching

1. e
2. b
3. c
4. a
5. d
6. f

Part Two: Short Answer

1. Study, presentation, and development are three categories of models.
2. The different roles of a model include the following:
   - A model may be used to refine building design. Models may be used to study the impact the building will have on the site.
   - A model may aid in presenting a project to a client or an audience.

Part Three: Completion

1. education and presentation
2. computed-aided drawings
3. concept
4. process
5. space planning
6. function

Sample Test

Name _____

Explore the History of Modeling

Part One: Matching

Instructions: **Match the term with the correct definition.**

a. concept model
b. model
c. large-scale model
d. massing model
e. small-scale model
f. master builder

_____1. A detailed scaled model used to show the overall concept of a design

_____2. A scaled representation of a building

_____3. A detailed scaled model used to show a specific area of a design

_____4. A rough model used to show ideas and the concept for the building design

_____5. A simple scaled model used to show the general size and volume of a building

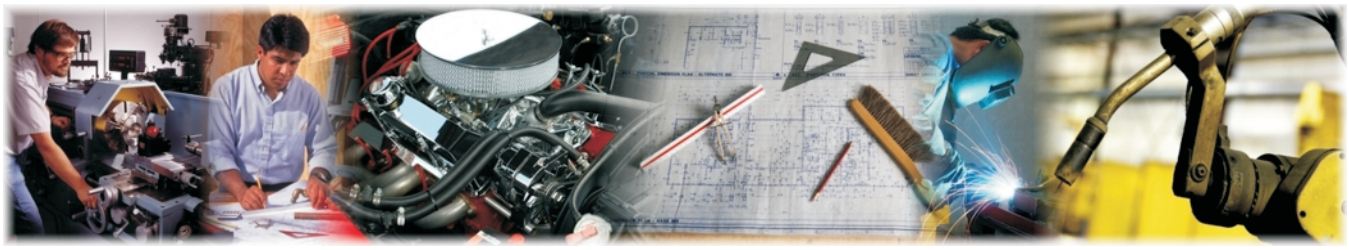
_____6. An individual who was responsible for the entire project

Part Two: Short Answer

Instructions: **Complete the following.**

1. Define three different categories of models.

2. List the different roles of a model.



Part Three: Completion

Instructions: **Provide the word or words to complete the following statements.**

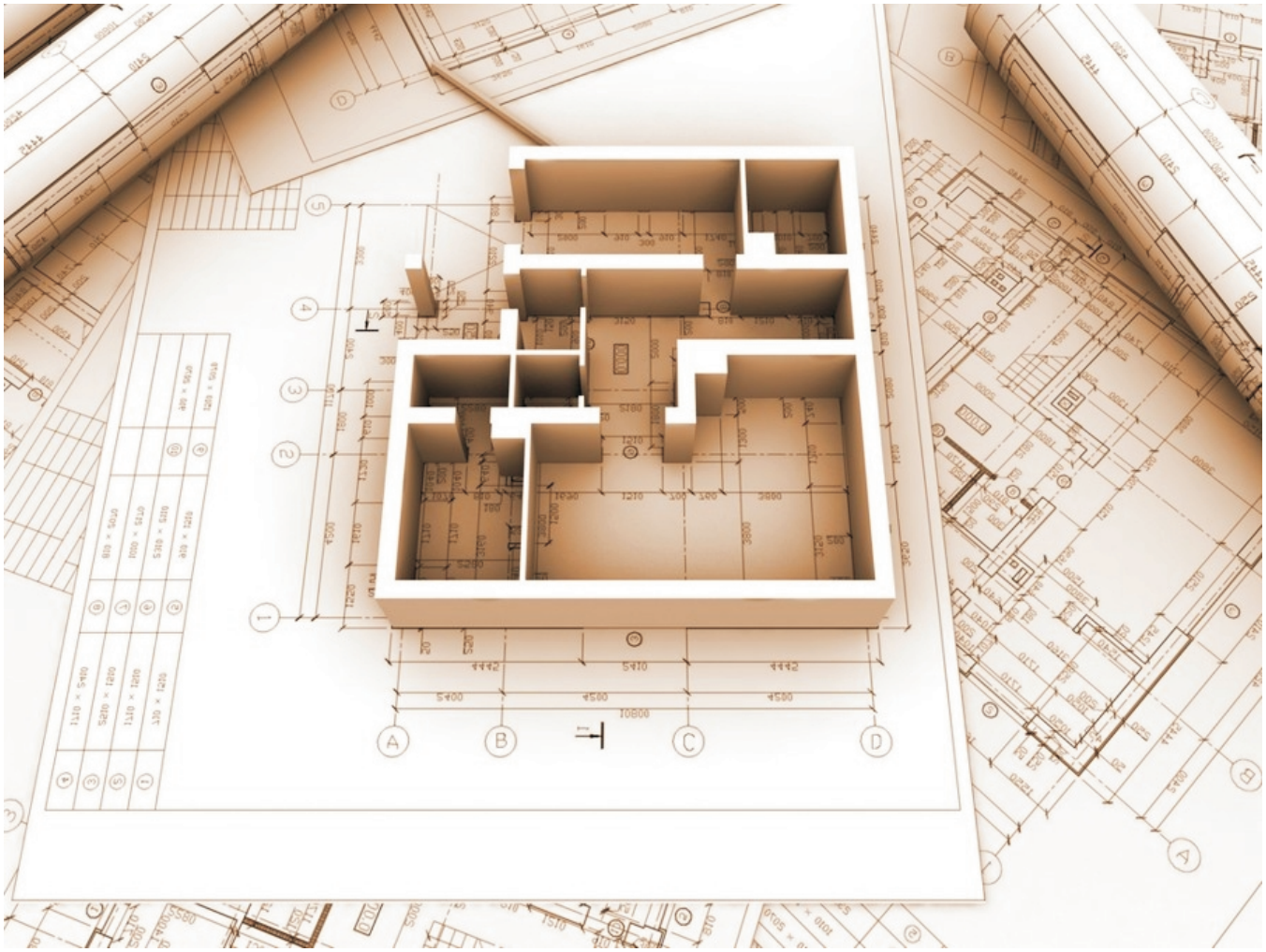
1. During the modern architecture movement, models were used for _____ and _____.
2. Today, 3-D models are seen in _____ and traditional models.
3. A(n) _____ model is the study of an idea that can be the basis of the building design, not necessarily a scaled model.
4. _____ models may be used to show the function within a specific space.
5. _____ designates an area within a room or building for a specific object or task in a space.
6. A(n) _____ is the use of a space.

MASSING MODEL OF A BUILDING

VM–B

PRESENTATION MODEL

MODEL OF A FLOOR PLAN



VM–D

MODEL OF SITE CIRCULATION