

Lesson Plan: The Architect's Apprentice - Applying Classical Proportion

Subject: Architecture & Design, Art History, Applied Mathematics

Grade Level: High School (Approx. Age 15)

Time Allotment: Approximately 2.5 - 3 hours

Materials Needed

- **Technology:** Device with internet access to watch "A Theory of Proportion in Architecture & Design, with Steve Bass, Part ii" (available on YouTube via the ICAA channel).
 - **Drawing Supplies:**
 - Large sheets of paper (11x17 or similar) or a sketchbook
 - Pencils (a variety of hardness is ideal, but a standard #2 will work)
 - A good eraser
 - Ruler or straight edge
 - Compass (for drawing circles and arcs)
 - **Optional Advanced Materials:**
 - Graph paper or dot grid paper
 - Tracing paper
 - Colored pencils or fine-line markers for rendering
 - Free 3D modeling software like SketchUp Free or Tinkercad
 - Cardboard, craft knife, and glue for a simple physical model
 - **Printable:** "Architect's Design Brief" worksheet (provided below).
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1. Learning Objectives

By the end of this lesson, the student will be able to:

- **Analyze:** Identify and explain at least three key principles of classical proportion discussed in the video (e.g., the role of the column, intercolumniation, relationship between parts and the whole).
- **Apply:** Use a proportional system (like basing measurements on the diameter of a column) to create a coherent architectural elevation sketch.
- **Create:** Design an original small-scale structure (e.g., a garden pavilion, a monumental gateway) that demonstrates a clear understanding of harmony and proportion.
- **Justify:** Articulate their design choices in a "Designer's Statement," referencing specific concepts from the lecture.

2. Alignment with Standards

This lesson connects to several core learning areas:

- **Visual Arts (Creating):** Encourages conceiving and developing new artistic ideas. The student generates and conceptualizes artistic ideas and work, then organizes and develops them.
 - **Geometry (Ratios & Proportions):** Provides a real-world, tangible application of geometric
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principles, scale, and ratios. The entire lesson is an exercise in applied geometry.

- **Critical Thinking & Problem Solving:** The student must translate abstract rules of proportion into a practical, creative design solution.

3. Instructional Strategies & Lesson Activities

Part 1: The Warm-Up - "What Makes it Beautiful?" (15 minutes)

The goal here is to activate prior knowledge and get the student thinking about aesthetics before learning the formal rules.

1. **Engage:** Present the student with two images of building facades. One should be a well-proportioned classical building (like the Pantheon) and the other a building that is intentionally or unintentionally disproportionate.
2. **Discuss:** Ask guiding questions:
 - "Which of these buildings feels more 'right' or pleasing to you? Why?"
 - "What differences do you notice in how the windows, doors, and columns relate to each other?"
 - "If you had to describe the 'feeling' of each building, what words would you use? (e.g., balanced, chaotic, calm, jarring)."
3. **Introduce the Concept:** Explain that for centuries, architects have used specific mathematical systems, or "rules," to create the balanced and harmonious feeling they observed in the first building. Today, they will become an apprentice architect and learn some of these secret rules.

Part 2: The Lecture - "Architect's Briefing" (60 minutes)

In this section, the student will watch the video to gather the specific knowledge needed for their project.

1. **Set the Task:** Instruct the student to watch "A Theory of Proportion in Architecture & Design, with Steve Bass, Part ii." Their mission is not just to watch, but to be a detective, looking for the "rules" of proportion.
2. **Guided Note-Taking:** Ask them to divide a page into three sections and take notes on:
 - **Key Vocabulary:** What new terms are introduced? (e.g., Entablature, Pediment, Intercolumniation, Module).
 - **Core Concepts:** What are the big ideas? (e.g., "The diameter of the column is the basic unit of measurement," "The relationship of solid to void").
 - **Visual Examples:** Sketch a quick, simple version of one of the diagrams or buildings Steve Bass uses to illustrate a point. This helps solidify the concept visually.

Part 3: The Creative Project - "The Design Challenge" (75+ minutes)

This is the core of the lesson where application and creativity come to life. The student takes on the role of the architect.

1. **Present the Brief:** The student's task is to design the front elevation (the main face) of a small structure. Provide them with the "Architect's Design Brief" below.

Architect's Design Brief

Your Client: A patron of the arts.

The Project: Design the front elevation for ONE of the following structures:

- A small Garden Pavilion for quiet contemplation.
- A monumental Gateway to a grand estate.
- The facade of a small, private Museum.
- A structure of your own invention (e.g., a fantasy library entrance, a futuristic temple).

The Constraints (The Rules):

1. You must use a column as your basic module. Decide on a diameter for your column, and base all other measurements on that unit (e.g., the height of the column is 8 diameters, the space between columns is 2.5 diameters, etc.).
2. Your design must include at least three key elements discussed in the video (e.g., columns, a pediment, a properly proportioned entablature).
3. Label your sketch with key measurements written in terms of your module (e.g., "Width = 10D," where D is the column diameter).

2. Design Process: Encourage a step-by-step process.

- **Step 1 (Thumbnail Sketches):** Start with several small, quick, rough sketches to explore different ideas. Don't worry about perfection.
- **Step 2 (Select & Refine):** Choose the best idea and begin a larger, more careful drawing. Use a ruler and compass. Start by drawing the baseline and establishing the column diameter (the module).
- **Step 3 (Build the Design):** Use the module to lay out the rest of the structure proportionally. Refer back to notes from the video.
- **Step 4 (Detail & Label):** Add details like windows, doors, and decorative elements. Neatly label the key proportions.

Part 4: Closure - "The Designer's Statement" (15 minutes)

This reflection step solidifies the learning and serves as a key assessment tool.

1. **Write:** On the back of the drawing or on a separate sheet, ask the student to write a short paragraph (3-5 sentences) explaining their design.
2. **Prompt:** The "Designer's Statement" should answer:
 - "What was the 'big idea' or rule of proportion you focused on most?"
 - "Describe one specific choice you made and explain how it was guided by the principles from the video."
 - "What was the most challenging part of applying these rules, and what did you learn from it?"

4. Differentiation and Inclusivity

• For Support:

- Provide graph paper to make drawing with a consistent module easier.
- Offer a pre-made template with a baseline and a single column drawn to scale, from which the student can build their design.
- Focus on a simpler structure, like a basic "portico" with just columns and a roof.

• For Challenge/Extension:

- Ask the student to design a side elevation in addition to the front.
- Challenge them to build a simple 3D model of their design using cardboard or to create it in free software like SketchUp.
- Have them find a local building in their community and analyze its proportions, sketching it and noting where it follows or breaks classical rules.

5. Assessment Methods

Assessment is based on the application of concepts, not memorization.

- **Formative (During Lesson):** Observe the student's process. Are they referring to their notes? Are they using their ruler and module to measure? The questions in the warm-up also serve as a formative check.
- **Summative (End of Lesson):** The primary assessment is the final project, evaluated using a simple rubric:

Criteria	Developing (1 pt)	Proficient (2 pts)	Exemplary (3 pts)
Application of Proportional System	Design shows an attempt to use a module, but it is applied inconsistently.	The design clearly uses a module (the column diameter) to determine the dimensions of its major parts. Proportions are mostly consistent.	The design expertly and consistently uses a module for all major and minor elements, creating a visibly harmonious whole.
Inclusion of Key Elements	Includes one or two required elements, which may be incorrectly drawn.	Includes at least three required classical elements that are correctly proportioned relative to each other.	Includes multiple classical elements that are integrated thoughtfully and creatively into a unique, coherent design.
Designer's Statement	Statement is brief and does not clearly connect the design to concepts from the video.	Statement explains a design choice by referencing at least one specific concept from the video.	Statement provides a clear, insightful explanation of design choices, using specific vocabulary and concepts from the video to justify the work.