



The Art In Architecture

Curriculum Unit 83.01.03
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In most cases it would be a rare finding if any student could clearly define what is architecture. Architecture relates to the space around you, in a community, that will be filled with buildings designed by combining art, science and mathematical skills. These skills combined are called the aesthetic elements. When properly presented to the students, the basic understanding of the art in architecture will be developed. There are many architectural dimensions that will not be included in this unit: function, engineering, economics, labor factors, and so forth.

In the art class, projects that are made have visual beauty that is developed by successfully combining the use of line, shape, color, light and space. The student will transfer their thoughts into sketches that will clearly demonstrate pattern, rhythm, unity and contrast, just as the Architect will do when designing a building. Buildings are created for their beauty as well as being functional.

The following objectives will be developed in this unit:

1. Students will be able to define many of the aesthetic elements of Architecture.
2. Students will become aware of various architectural styles.
3. Students will be able to recognize the different architectural styles in their community.
4. Students will be able to successfully reproduce basic forms in the facade of a building.
5. Students will increase their knowledge of architectural styles and choose a favorite style.
6. Students will exhibit a feeling of balance in the drawings of a building.
7. Students will demonstrate the process of printmaking from their string relief.
8. Students will be able to demonstrate their ability to combine line, shape, color, light and space in their projects.
9. Students will be able to construct a free standing model of a building by the repetition of shape at a smaller scale.

This unit is designed for the use of average students at the eighth grade level. Most of the students would like the opportunity to construct a model of a building, whether it is of Roman, Greek, Gothic or modern in style. Using their mathematical ability to measure and their art knowledge the students will enjoy creating a small community.

The first step that the students will take is to gain a basic written knowledge of architecture. They will be able to recognize characteristics that represent the styles. This will be done by a reinforcement of knowledge using transparencies shown in class. An open discussion of the pictures will usually get the students to respond with their feelings about a building. Since the pictures are of familiar buildings in their own community, the students will be able to relate to the different visual architectural styles more easily.

Once the students can easily recognize the different styles they will have the opportunity to duplicate the faced! of one of the buildings shown from the transparencies. Tracing the projected image from the transparency allows the student to draw a better proportioned drawing and the faced. "will look like the building".

The third step is to try to duplicate their projected image drawing onto a piece of oak tag. By applying yarn or string to their lines, the image is built up for printing. Their ability to apply their knowledge of symmetrical and asymmetrical balance will be displayed in this project. Color will be applied with assorted colored inks and a monochromatic color print can be developed to give a three dimensional effect.

The final project will be a duplication of a building by creating a small model, The students will have to measure accurately to duplicate size on a smaller scale. This project will be a challenge for the students. The guidance from the teacher will build the students' self confidence in completing the proportioned building,

In the sequence of projects, starting from recognition of styles to the end project of the completed building, the student will have gained the basic knowledge listed in the objectives. Every time the student walks in their community, the reinforcement will derive from recognition of the building styles around them. This recognition will support all they have learned regarding architectural aesthetics.

Lesson #1 What is Architecture?

Objectives:

- 1 Students will be able to define many of the aesthetic elements of architecture.
2. Students will become aware of various Architectural styles.

Motivation:

1. Distribute Handout Pretest A-1...,Students will test their knowledge of recognizing the different

- architectural styles before having the lesson
2. Have the students hand in their test when completed.
 3. Begin lesson according to procedure below.

Materials:

Pre-test A-1 Ditto #1 Drawing style examples

Post-test A-1 Ditto #2 Architectural Terms

Procedure:

Make an outline on the blackboard for the students to follow along with to take notes.

A. What is Architecture?

1. *Lamont Moore* states that Architecture is the art of enclosing space for human purpose.
 - a. *space*— an area provided for a specific purpose that is between specific boundaries.
2. Dictionary defines Architecture as the art and science of designing and erecting buildings.
3. Aesthetic principles from art, science and mathematics are employed in Architectural Design. e.g. the use of line, shape, space, light and color by developing a pattern, balance, rhythm, contrast and unity.
 - a. Together these elements allow architects to create beautiful, useful buildings.
 - b. The aesthetic principles together with the structural aspects help make a successful building.
4. Architecture is about space,

B. Architectural Styles

1. *Greek*

a) Distribute Ditto #1 (Columns)

1) *Ionic Columns*— the old Greeks would say a building is like a woman. Vitruvius, an ancient Architect, might describe the two curls on the top of the column as pieces of a woman's hair and the base as her feet. The curls may also be described as rolls of music, Statues of woman sometimes replaced the columns. The heads held up the roof.

2) *Doric Column*— A simple and plain column Built on a stepped platform, Usually made of solid stone, Column has no base, It tapers slightly, The sides were *fluted* to make the columns look thinner. i.e., Parthenon

(figure available in print form)

3) *Corinthian Column*— The Greeks started this new style of columns but they did not like it very much and hardly ever used it. An Ionic column with a leafy design at the top, The leaves are acanthus leaves,

b) The Greeks placed a single slab of stone across the top of the columns,

c) Buildings had slanted roofs—used to keep the rain out.

2. *Roman*

a) Romans combined the Corinthian Column with the Ionic Columns, They called this column a composite column, The curls are larger,

- b) Columns were placed on a box shaped pedestal,
- c) Built arches to rest on the columns, Greeks use to place slabs across the columns,
- d) The first to make cement from water, sand and pebble mixture.
- e) Romans combined the rounded arch and vaulted forms to create a ceiling that would cover a larger area.

3. Gothic

- a) Gothic developed from the Romanesque style,
- b) Gothic architects developed a rib crossing that went in the middle of a vault or dome,
- c) Cathedrals in the 12th century used pointed arches instead of round arches.
- d) Gothic buildings grew in height to several stories that supported each other. The Greek and Roman temples ran horizontally and the columns seemed to be set firmly on the ground,

Distribute Ditto #2 (Architectural terms)

Go over the dictionary terms with the class for better understanding of the meanings. You may want to use the terms for a test,

C. Distribute Post-test A-I, (Same as pre-test A-I)

Answers: I.

- Gothic D
- Roman F
- Greek E
- Ionic B
- Doric A
- Corinthian C

II. Answers may vary

Project #1—“Architecture Design” Folder

Have the students make a folder showing designs representing the architectural styles,

Materials:

Assorted construction paper 18 x 24”, pen and ink, rulers, pencils.

Procedure:

- 1 Pass out 1 sheet of 18 x 24 construction paper,
- 2 Fold the paper in half
(figure available in print form)
- 3, Open up the paper, With a ruler measure up from the bottom of the paper 6”. Fold.
(figure available in print form)
- 4, Fold paper back in half so that when the folder is opened, the cuff is on the bottom:
(figure available in print form)
- 5, Have the students design the cover. Place name on the bottom right corner. This folder will be used to collect and hold all materials relating to the architecture projects.

Lesson #2 Mixed Media Picture Enlarging

Objectives:

- 1 Students-will be able to identify the architectural style of buildings in their own community
2. Students will be able to successfully reproduce the basic forms in the faced. of a building.

Motivation:

Using an overhead projector, students will analyze black and white transparencies of buildings in the city of New Haven. An open discussion will clarify the history and the style of the building. The class will see approximately twenty transparencies. Once the buildings are analyzed each student will choose one slide that he/she would like to trace the outline from. The detail can be filled in by looking at the picture.

Demonstrate the procedure in class.

Materials:

Overhead projector, 20 transparencies of buildings, pencils, paper 12 x 18, pen and black ink, watercolors and masking tape.

Concepts to be explored:

1. line—the division between different areas and objects.
2. lines can show detail.
3. proportion—used in architecture to achieve beauty.
4. repetition of identical columns or parts to give the building symmetry.

Procedure:

1. Set up overhead projector on a screen or wall in the room,
2. Show one transparency at a time. Discuss the history of the building and the architectural style.
3. Allow the students to recognize the buildings in their community.
4. See attached list of transparencies and the description of each. (Ditto #3)-Distribute one to each student. Transparencies are available at the Yale Teacher Institute, 53 Wall Street, New Haven, Conn.
5. Allow students to pick out the building faced! he/she would like to trace.
6. Demonstrate the procedure:
 - a) take a sheet of 12 x 18 paper and tape it to the wall.
 - b) project the image from the transparency onto the paper.
 - c) Trace the outline only of the building facade.
 - d) Take the paper off the wall, Begin to fill in the details using a ruler and pencil.
7. Using Pen and Indian ink, trace over pencil lines. Fill in details with pencil first then outline in ink.
8. Watercolors may be used to bring in color to the drawing.
9. Have a critique regarding the finished drawings.

Lesson #3: String Printing (Balance)

Objectives:

1. Students will increase their knowledge of Architectural styles and choose a favorite style.
2. Students will exhibit a feeling of balance in the drawing of a building.
3. Students will demonstrate the process of printmaking from their string reliefs.
4. Students will demonstrate their ability to combine line, shape, color, light and space in their project.

Motivation:

1. Refer to lesson 2s the projected transparency drawings.
2. Allow the students, once again, to see the transparencies showing the different architectural styles.
3. Show an example of how the print is done and show a print done from the example.

Materials:

transparencies	glue
cardboard	tape
newsprint	string/yarn
pencils	printing ink
rulers	printing tray
construction paper	brayers

Procedure:

1. Discuss the methods of printmaking:
 - a. *printing*— transferring an image from one surface to another.
 - b. *relief*— to build up or cut away a surface.
 - c. A *print*— is a reversal of the original image.
 - d. *String printing* —is the built up image on a particular surface.
 - e. *balance*— to equally distribute the visual design creating either a symmetrical pattern (formal balance) or an asymmetrical pattern (informal balance).
2. Show transparencies—students can relate to visual examples more easily than to actual

architectural terms. Reinforce the types of Architectural styles:

- a. Greek Classical—symmetrical Pillars
 - b. Roman Classical-symmetrical Pillars
 - c. Gothic—pointed arches, vertical lines, stained glass windows.
 - d. Neoclassical—repeat of Greek and Roman ornament in more modern building types,
3. Have students choose a building.
 - 4 Pass out oaktag. Have students draw the building.
 5. When the drawing is complete, place glue on pencil lines and cut string to fit the lines. Then glue in place. Allow to dry.
 6. Printing Procedure:
 - a. roll out ink with a brayer on a tray,
 - b. roll brayer with ink over the printing plate.
 - c. press colored construction paper on inked side of print, Press down firmly,
 - d. take print off. Allow to dry.
 - e. Print with monochromatic colors; light color first, then darker color. (light blue with dark blue)
This will give a three dimensional image.
 7. Have a class evaluation of the project. Each student will define the style of the building done and explain why they used the colors they chose for the project.

Lesson #4: Cardboard Building Construction

Objectives:

1. Students will be able to construct a free standing model of a building by the repetition of shape at a smaller scale,
2. Students will be able to make a kit that will include all the parts to produce a building model,

Motivation:

Show the students the completed model of the building that they will make, Indicate that each student will successfully complete the same building by following a step by step instructional project that will be from a kit designed by them, Reassure the students that the teacher will be working closely with each student to make sure each piece is completed properly.

Materials:

Corrugated Cardboard Scissors
 Cardboard Mat knives
 Masking tape Pencils
 Rulers Magic Markers
 Compass/protractor

Procedure:

1. Distribute 3 sheets of corrugated cardboard 9 x 12 to each student.
2. Distribute Ditto #3 (A Step by Step Plan of a Roman Temple).
3. Begin with making the Columns.
 - a) Using a ruler, have the students mark off measurements of 1-1/2" strips. Draw a line horizontally Indicate that they should be using the 12" side of the paper, ending with 6 strips. Repeat this on the other two sheets of corrugated cardboard (equals 18 (1-1/2") strips)
 - b) Measuring the 9" side of the corrugated cardboard, rule off two (2) 4" strips. Repeat on the other two sheets.
 - c) Cut strips until there are 36 1-1/2" x 4" strips.
 - d) Roll each strip so that you form a cylinder Glue in place. Repeat this until all 36 columns are completed. They should now measure 1/2" x 4".
 - e) Decorate the top of the columns using the Corinthian style. Students may attached curled strips of paper by gluing or draw with magic markers. Leave this section to their own imaginations.
4. Base
 - a) Pass out a sheet of cardboard 6" x 14".
 - b) Using a ruler mark from the front edge: 3-1/2" Draw a pencil line across. (Refer to Ditto #3, step 1)
 - c) In pencil, mark off twenty-one (21) 1/2" spaces Draw a line across the paper.
 - d) Across the back edge of the paper, measure 1/2" spaces again. Draw a line down to the front line previously drawn. (Refer to Ditto #3, step 2). You will now have completed a grid of 231 squares.
5. Place one cylinder column on *every other* 1/2" square starting on one of the sides . . . then on the opposite side. (Refer to the dots on Ditto #3, step 2). Glue each of the 36 columns in place,

This process should take the student a little longer since they will have to wait for the columns to set in place.

6. Walls

a) Distribute 1 piece of cardboard 26-l x 6" to each student,

b) using a pencil and ruler, mark off the following measurements:

(figure available in print form)

c) Bend the cardboard on the vertical and horizontal lines, it will look like this:

(figure available in print form)

d) Glue the bottom of the fold to the grid just inside the columns, (Refer to illustration on Ditto #4, step 3).

(figure available in print form)

e) Back wall of temple. Cut a piece of cardboard 3" x 6".

Fold on the horizontal lines that are 1" from the top and bottom line. Fit on a *curve* into the space between the front two columns and the back wall columns. Glue.

7. Cornice

a) Distribute cardboard 28" x 2 1/2".

b) Mark off the following measurements:

(figure available in print form)

c) Fold to form an open square. Tape corner edge to attach. Bend bottom and top horizontal folds. Glue bottom fold to the top of the wall unit.

8. Pediment

a) Distribute cardboard,

b) Cut out two pediments measuring one side 5 1/2" and two sides 3", Add one inch around-the triangular shape for attaching, Bend at folded areas, Glue bottom fold to top fold of front cornice, Repeat for back, (Refer to Ditto #4, step 4).

c) *Before* attaching the front *pediment* , follow the instructions for the *portico cornice* .

d) Pediment illustration

(figure available in print form)

9. Portico Cornice

a) Measure and cut the cardboard:

(figure available in print form)

b) Fold cardboard into shape:

(figure available in print form)

c) Glue one 5 1/2" side to the front of the other cornice. Glue the portico columns to the bottom fold edge.

10. Roof frame and Tiles

a) Distribute 30 popsicle sticks to each student and glue

b) Make 10 *trusses* (triangular wooden frames)

(figure available in print form)

c) Line the trusses on the top ledge and glue. You may want to attach a string to the front and back pediments to weave through the—trusses to secure them upright..

d) Cut a piece of cardboard 6" x 14". Fold the 6" width in half to form the roof. Have students draw a curved tile roof with magic marker. Roof can be made stationary by gluing or left so it can be removed to view the inside.

(figure available in print form)

11. Critique

Students will be able to discuss their feelings regarding the construction of the building. They will share the knowledge gained in this unit by using the architectural terms to explain parts of the building. Hopefully, most student will have enjoyed making and building their own building kit.

Pre-test A-1

Architectural Styles

I. Place the proper letter in the space next to the Architectural terms: (10 pts. ea.)

Gothic ____

Roman ____

Greek ____

Ionic ____

Doric ____

Corinthian ____

(figure available in print form)

II. Define: (10 pts. ea.)

Architecture -

Arch -

Dome -

Facade

(figure available in print form)

Ditto #2 – Lesson 1

Architectural Terms

Architect— from the Greek word *architekton*. Master builders would construct temples and other public buildings.

Abutment— a part of a wall unit built to support pressure, such as an arch.

Apse— Found at the Alter end of a church (Eastern side), a half-circle usually with a domed ceiling

Arch— A curving structure made of wedge-shaped parts, used to span an opening and capable of supporting weight from above.

Balustrade— a rail and a row of posts of ornamental columns that support it.

Buttress— a structure built out against a wall or building to give support and strength.

Colonnades— rows of columns connected at their tops by a cornice.

Column— a pillar supporting a roof.

Cornice— the horizontal molded projection at the top of a building.

Dome— a half sphere shaped roof.

Facade— the front of a building.

Gargoyle— any grotesque carving of a human or animal jutting from the eaves of a building.

Lintel— a horizontal piece across the top of an opening. Often used to hold the weight of the structure above it.

Nave— the central or main body of a church, usually running from the front entrance.

Obelisk— a four sided pillar that tapers at the top and ends in a pyramid.

Pediment— the triangular space that forms the gable of a roof.

Peristyle— the open courtyard or garden in a Roman house.

Pilaster— an upright column built into a wall and projecting slightly from it.

Portico— a row of columns supporting a roof around the entrance of the building.

Vault— an arched structure, usually forming a ceiling or roof.

Ditto #3

Transparencies

1. Vanderbilt Hall, 1884. Charles C. Haight (see #2)
2. Vanderbilt Hall, 1884. Yale Campus. Use to be a welcoming forecourt designed to be the opening door for the University.
3. Phelps Gate, Yale Old Campus, Tutor gatehouse. Now used to enter freshman dormitories.
4. Sterling Memorial Library, 1927. James Gamble Rogers Modern Gothic style.
5. Harkness Memorial Tower, 1917 James Gamble Rogers, New York. Medieval building built in the 20th Century

6. Sterling Law Building, 1930. James Gamble Rogers Gothic Revival. Medallions in the windows and small carvings of foliage, prisoners' chains, portraits and cops and robbers are all part of this Gothic building.
7. First Congregational Church (Center Church), 1812-15. There is an interior dome. Has leafy scroll ornaments. The church is built over a crypt (an old Colonial burying ground).
8. City Hall, 1861 Henry Austin. High Victorian Gothic movement
- 9 Yale University Press.
10. Ezekiel Trowbridge House, 1852. (see #11)
11. Ezekiel Trowbridge House, 1852. Now Center Church, Parish House, 311 Temple Street. Sidney Mason Stone. Open balustrades around the roof and top of the porch,
12. John P. Norton House, 52 Hillhouse Avenue, 1848-49 Henry Austin Rounded arches An early version of the towered Italian Villa.
- 13 James Dwight Dana House, 1849 Henry Austin, Villa 14. style. A Prim cube with exotic trim Plant-like columns Cornice imitating an oriental canopy.
- 15 Aaron Skinner House, 1832. 46 Hillhouse Avenue Alexander Davis Greek Revival.
16. Yale University, New Art Gallery, 1953, Louis I. Kahn Yale's first modern building. Concrete ceilings,

Architectural Styles – Post-test A-1

I. Place the proper letter in the space next to the Architectural terms: (10 pts. ea,)

Gothic ____

Roman ____

Greek ____

Ionic ____

Doric ____

Corinthian ____

(figure available in print form)

II. Define: (10 pts. ea.)

Architecture -

Arch -

Dome -

Facade-

Ditto #3

(figure available in print form)

Ditto #4

(figure available in print form)

Notes

1. Morris, William, Editor, *The American Heritage Dictionary of the English Language*. (Houghton Mifflin Company, Boston, 1981). All Definitions for the Architectural Terms are from the above source.

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