



Elementary Analysis and Design in Architecture

Curriculum Unit 84.01.08
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This unit is intended to teach 6th grade students in New Haven about modern and traditional architecture through specialized analysis of different types of homes. This unit contains floor plans of a house, apartment, and elevation for the students to study and analyze. The students will understand the homes and their performance through studying the floor plans. I have written a continuation and refinement of my previous architectural unit entitled "Space and Body in Architecture". This unit contains a more comprehensive and detailed explanation of how to read and draw floor plans.

The latter portion of the unit is on how some people design houses, porches, entrances, etc. The designs can be represented in a variety of ways such as drawings, models, collage, verbal description, tracing, magazine pictures, painting, etc. There are many types of decisions the students will have to make while designing architecture. The culminating activity is for the students to prepare a preliminary design of an architectural element of their choice.

To analyze a house we need to understand how the house works and what it is about. The interior and exterior should be reviewed closely to gain an over-all impression and sense of continuity. The spatial divisions and functions can be analyzed as formal/informal or horizontal/vertical circulation areas. The function of space should be casual and appealing. Specific aspects should be studied such as:

roof—type high angular, slate shingles

walls—barrier, boundary, enclosure of space, privacy

hall —arge, wide, deep, spatial area, lighting

fireplace—location, size use of

entrance—size, lighting, location, number of

staircase—location, angle, material

windows—size, shape, type, continuity to structure

rooms—size, location, shapes, specialized spaces, secluded rooms

floors—different levels, change of planes

yard—landscape, shrubbery, vines, trees, garden

ornamentation—wood carvings, designs, patterns

lighting—dark, gloomy, airy, bright, electric, natural “indirect”

inside—decor appearance, mood tones, paneling, paint, wallpaper, textures, furniture

Architectural design is not just concerned with ornamentation or detail, but with the practical and esthetic requirements such as proportion, openings, needs, taste, and a pleasing appearance. The design problem should be studied logically and include many ideas. Thought should be given to what gives character to the plans, elevations, sections, and details.

The design can be expressed in a variety of ways as I mentioned previously. One or more ways should be selected according to the designers ability and experience.

drawings —if the student is able to draw/sketch logically/ legibly on paper

models —scaled version of projects made from clay, cardboard, toothpicks or any workable available material

collage —students can express their idea or feeling by arranging objects into an interesting form of art, materials including magazine pictures, newspapers, scrap material, metals, etc. can be used

verbal — description note exact details including color, dimensions, texture, materials, cost, patterns, shapes, forms, and feelings

tracings —use floor plans and pictures of buildings already built to become familiar with the process of designing

magazine pictures —choose pictures of things you like from a variety of magazines or brochures and organize so a sketch can be made from them

painting —same as drawing to express color/moods

The following lists are possible steps to analyze existing conditions and proposals for new conditions or designs.

Analysis and Reworking of Existing Conditions

1. rough sketch leading to floor plan of existing site
2. location of boundaries
3. floor plans including key items
4. sections showing important interior elevations
5. analyze conditions to determine what modifications or designs you want to do, think about what improvements or change could be worked on such as a skylight, window, or entrance

Proposals for New Conditions or Designs

1. after reviewing the existing conditions choose a room that is of interest and could benefit from a change
2. the following are examples of problems that should be looked at in the room that was chosen:
 - a. space
 - b. light
 - c. path
 - d. viewing
 - e, privacy
 - f. storage
 - g. fireplace
 - h. inside decor
3. choose one of the problems in the room that could be corrected by a new condition or design
4. make a rough sketch, if unable to draw gather magazine pictures
5. modifications and adjustments need to be approved and suggested by teacher
6. sketches or pictures are needed of all the significant details
7. drawings of inside and outside of project should be graphic and show general character and appearance, the drawings should be to scale
8. drawing of what the structure will look like through pen, pencil, watercolors, etc.
9. decisions on details have to be made such as colors and styles
10. a written description of all material and equipment that are necessary with approximate costs, (students will be given a list of all materials and prices to choose from)
11. construct a model

Objectives

The students will be able to:

1. recognize the symbols used in floor plans.
2. read and use a scale ruler.
3. read floor plans and understand their purpose.
4. analyze examples of rooms through floor plans.
5. understand measurements made with a ruler or yardstick.

6. draw floor plans to scale of their own home, apartment, or room.
7. follow the steps in a design.
8. make or prepare a preliminary design of their choice.

Extra Activities

1. Draw in furniture arrangement on a floor plan outline.
2. Draw floor plans of a section of school such as a classroom and furniture arrangements.
3. Measure and draw interior elevations of a house, room, or apartment.
4. Compare different housing in the community by exchanging floor plans.
5. Analyze a building the student likes for a particular reason.
6. Write a descriptive narrative of where you live or why you would like to move to another place.
7. Write a descriptive narrative about the type of house or apartment you'd like to live in and why.
8. Experiment with changing a simple floor plan into different scales.
9. Make a collage expressing the feelings of where you would like to live.
10. Trace the outline of a building and fill in your own details.
11. Paint a favorite building in the community.

Lesson Plans

Lesson I

Objective:

Students will be able to recognize and draw the basic symbols used in floor plans.

Lesson Outline:.

1. Describe to students what a floor plan is.
2. Explain what each symbol is in a floor plan and why.
3. Copy Worksheet #1 and give to each student.
4. After a review is given on the symbols, quiz the students by asking them to draw each symbol.

Lesson II

Objective:

Students will be able to read and use a scale ruler.

Lesson Outline:

1. Review the floor plan symbols.
2. Teach the concept of proportion used in floor plans.
3. Copy Worksheet #2 and give to each student.
4. Students should cut out each scale ruler. (Students can tape the strip over their standard rulers for temporary use.)
5. Direct the students to practice using proportions and measuring by drawing squares and rectangles. Using each scale draw a 3' square and a 4' by 6' rectangle.
6. Discuss which scale makes the drawing either larger or smaller and why.

Lesson III

Objective:

Students will be able to read a floor plan of a house.

Lesson Outline:

1. Copy Worksheet #3, page 1 and 2, and give to each student.
2. Review measuring with the scale $1/8" = 1'$.
3. Explain how the symbols and proportions previously learned in Lessons I and II work together in

this floor plan. (Worksheet #3)

4. Measure length and width of the walls and openings.

5. Answer the questions on measurements and symbols on the bottom of Worksheet #3, page 2.

Lesson IV

Objective:

Students will be able to read and measure a floor plan of an apartment and an interior elevation.

Lesson Outline:

1. Copy Worksheet #4, page 1 and 2, and give to each student.
2. Measure and label dimensions of each room and hall on page 1.
3. Explain what an interior elevation is and how it is similar to a floor plan. (page 2)
4. Look at the interior elevation and show the students the wall it is an elevation of. Notice the AA on both the elevation and floor plan to show the correct position.
5. Have the students answer the measurement questions on the interior elevation using their scale rulers.

Lesson V

Objective:

Students will be able to choose a practical or esthetic design after reading a floor plan and elevation.

Lesson Outline:

1. Review Worksheet #4, page 1 and 2.
2. Review the list of *Proposals for New Conditions or Designs* mentioned earlier in the unit.
3. Decide what you would like to add to the apartment such as a window or skylight.
4. Copy Worksheet #5 and give to each student.
5. Choose one of the examples or think of your own and decide on the location.
6. Write a short descriptive narrative on why a particular design was chosen.

7. Draw the design to scale in the proper location, elevation drawing.
8. Construct a simple model using graph paper.

Lesson VI

Objective:

Students will be able to analyze their house, apartment, or room through making and studying their own floor plans.

Lesson Outline:

1. Review how to make measurements with a ruler, yardstick, or other measuring device.
2. Explain how to estimate to the nearest 6" or 12".
3. Students should sketch the basic interior outline of their house, apartment, or room to use for measurements.
4. Direct students to measure length and width of walls and openings. Suggest to start in the corners and measure to each opening and then record measurement to the closest 6" or 12".
5. Draw the sketch to scale using the measured dimensions.
6. Analyze the floor plans according to the list *Analysis and Reworking of Existing Conditions* previously mentioned. This will help in the proposal for a new design.

Lesson VII

Objective:

Students will be able to propose new conditions from their analysis of their own floor plans from Lesson VI.

Lesson Outline:

1. Discuss possible designs and review Worksheet #5 for ideas.
2. Propose a new design according to the list *Proposals for New Conditions or Designs* previously mentioned within the unit.

Worksheet #1

(Figure available in print form)

Worksheet #2

(Figure available in print form)

Worksheet #3—Page 1

(Figure available in print form)

Worksheet #3—Page 2

(Figure available in print form)

1. What is the dimension of the smallest bedroom? (length and width)
2. What is the dimension of the largest room? (length and width)
3. How many windows are on the first floor?
4. Which room is 4, X 8,?
5. How many sinks are in the house?
6. What is the dimension of the fireplace? (length and width)

Worksheet #4—Page 1

(Figure available in print form)

Worksheet #4—Page 2

(Figure available in print form)

1. What is the height of the door?
2. What is the height of the ceiling at the lowest point? highest point?
3. How far is it from A to A?
4. How wide is the door?
5. What is the height of the ceiling on both sides of the door entrance?

Worksheet #5

(Figure available in print form)

location —living room

ventilation —front rectangular window can open with a latch

lighting —Sea Gull 6199-31 with a clear glass globe, 60 watt bulb, or similar style

Bibliography for Teachers

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