Curriculum Guide

ARCHITECTURE
It's Elementary!

Third Grade
THIRD GRADE
LESSON NO. 1
METRIC SYSTEM

LENGTH OF LESSON: 30 - 60 Minutes

EDUCATIONAL OBJECTIVES:

A. Understand the basic components of the metric system with an emphasis on learning to measure the metric length of objects
   English/Language Arts
   • Meaning and communication
   Mathematics
   • Geometry and measurement
   • Patterns, relationships and functions
   Science
   • Use scientific knowledge from physical sciences in real-world contexts

B. Understand why it is important to learn to use the metric system
   Social Studies
   • Geographic perspective

ARCHITECTURAL PRINCIPLES:

Order is the arrangement and organization of elements to help solve visual and functional problems.

Visual thinking is key to awareness of the built environment.

Design is experienced through human sensory perception.

Mass creates form, which occupies space and brings into being a spatial articulation.

Social structure, culture and the built environment have a direct influence on one another.
MATERIALS

1. Drawings comparing English and metric lengths of some common objects (included).
2. The English and metric ruler (included). Photocopy to the exact size shown and cut out for each student.

VOCABULARY (See glossary for definitions)

1. Centimeter
2. Kilometer
3. Meter
4. Metric system
5. Millimeter

ACTIVITY

A. The teacher gives students a brief history of the metric system by explaining the following:
   1. The metric system began in the 1200s in England as a method for measuring length, volume, temperature, time, and weight or mass.
   2. Most countries other than the U.S. use the metric system today; the U.S. uses a system called the "customary" or "English" system.
   3. Early in the 1970s, Canada began to convert from the "customary" or "English" system to the metric system.
   4. In 1975, the U.S. Congress passed the Metric Conversion Act, calling for a voluntary change over to a system of metric measurement.
   5. The metric system is based on units of “ten” and is simple to use.
   6. Sometimes, the metric system seems more complicated to use than it is. That’s because when using the metric system in the U.S., we usually are converting from the English to the metric system.
   7. The basics of the metric system and sample comparisons:
      a. Volume: Liter (slightly larger than a quart);
      b. Time: years, hours, minutes, and seconds (same as English system);
      c. Weight and mass: Gram;
Third Grade ♦ Lesson One

d. Temperature: Celsius (32 degrees Fahrenheit = 0 degrees Celsius);
e. Length: Millimeter = 1/1,000th of a meter (1 inch = 25 millimeters),
   Centimeter = 1/100th of a meter (1 foot = 30 centimeters),
   Meter (1 yard = .9 meters),
   Kilometer = 1,000 meters (1 kilometer = .6 miles).

B. The teacher shows the class drawings comparing the lengths of various
   objects measured in both the English and metric systems (provided). The
   teacher explains that each student will measure the size of an object
   using metric measurements.

C. The teacher assigns each student one or more classroom objects to measure and
   gives each student a cut-out metric ruler (included). The teacher demonstrates
   how to use the metric ruler. Each student writes down on a piece of paper the
   name of the object or objects to be measured and draws a picture
   of each object. The student then measures the object in the metric system
   and writes down the measurement next to the drawing of the object.

D. After the class has completed Part C, each student explains the object
   measured and its metric measurement to the class.

TEACHER’S EVALUATION

A. Analyze students’ understanding of the concept of an alternate system of
   measuring lengths, weights, volume, etc.

B. Evaluate each student’s ability to accurately measure with the new ruler.
A. House

- 6.6 meters
- 3 meters
- 10 feet
- 22 feet

B. Earth

- 12,756.32 kilometers
- 7,926.41 miles
C. Person

1.8 meters
180 centimeters
1800 millimeters
6 feet

D. Fork

15 centimeters
150 millimeters
6 inches
Third Grade ♦ Lesson One

Ruler

- Centimeters
- Inches
THIRD GRADE
LESSON NO. 2

ANTHROPOMORPHIC BUILDINGS

LENGTH OF LESSON: 30 - 60 Minutes

EDUCATIONAL OBJECTIVES:

A. Understand how a building functions
   Science
   • Construct new scientific and personal knowledge
   • Use scientific knowledge from the physical sciences in real-world contexts

B. Identify the major parts of a building by comparing them to the human anatomy
   English/Language Arts
   • Ideas in action
   • Inquiry and research
   • Meaning and communication
   Science
   • Use scientific knowledge from the life sciences in real-world contexts
   • Use scientific knowledge from the physical sciences in real-world contexts

ARCHITECTURAL PRINCIPLES:

Form follows function is a design approach where the form of the building is determined by the function of its spaces and its parts.

Nature is a model for architectural forms and shapes.

Design is experienced through human sensory perception.

Climate and the natural environment influence design decisions.

Past, current and future technologies influence design decisions.
MATERIALS

1. Charts, building photos and house outline copied for each student
2. Clipboards for building walk-through
3. Crayons and markers
4. Pencils and erasers

VOCABULARY (See glossary for definitions)

1. Beam
2. Electricity
3. Heating and Air conditioning
4. Plumbing
5. Post
6. Structure

ACTIVITY

A. The teacher explains that a building can be compared to a person’s body because they share many of the same characteristics.
1. Draw on the board and/or provide a handout to the students of “Comparison Chart #1” (included).
2. Explain the comparisons listed, pointing to actual areas of a student volunteer’s body.
3. Provide a handout for the class of “Comparison Chart #2” (included), in order to further explain and illustrate the comparison by means of a “Photo Analogy.”
B. Building observation walk:
After discussing the photos with the students, the teacher takes them on a walk around and through their own school building. Try to have a maintenance person or custodian as a guide.

The building tour should be an opportunity to point out to the students the elements and systems, described in the comparison charts, and to demonstrate how they are represented in the building.

The students should make their own comparison chart (similar to the included “Comparison Chart #1”) and use it to list and describe any additional anthropomorphic comparison that they may observe.
e.g. windows / eyes, speaker system / voice, awning / eyebrow, computerized building management center or computer center / brain, radio antenna / ears.

C. As an additional activity, if class time permits, draw a building with human characteristics:
• Talk to students about the surface features of a human being that relate to the outer surface of a house – for example, the eyes for windows, mouth for door, hair for roof, etc.
• Students use the house outline, crayon or marker to add human features to their building. Have them begin with pencil (erasable) and color over their drawing with crayon or marker.

D. Display the charts and discuss the comparisons as a group.

E. As an additional activity, compare how we take care of our human bodies to sustain our health and longevity, with how a building needs to be taken care of to ensure its health and longevity (its sustainability). See “Comparison Chart #3”.

TEACHER’S EVALUATION

A. Check the accuracy of the charts.

B. Have each student trade his/her chart with another student to check each other’s work.
### Comparison Chart #1

<table>
<thead>
<tr>
<th>Human Body</th>
<th>Building</th>
<th>Functional Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin &amp; Hair</td>
<td>Outside building walls and roof</td>
<td>The surrounding outside material that encloses everything else.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Many colors and textures</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Many sizes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Many shapes</td>
</tr>
<tr>
<td>Skeleton</td>
<td>Structural framework</td>
<td>The bones of the body are like posts and beams that hold up a building – a framework</td>
</tr>
<tr>
<td>Digestive System</td>
<td>Plumbing</td>
<td>We eat, drink, and remove waste from our body. Buildings have plumbing that brings in water and removes building waste.</td>
</tr>
<tr>
<td>Nervous System</td>
<td>Electricity</td>
<td>Our brain sends signals through our body-telling it to do things like move muscles. A building has electrical wires that send through power, allowing us to use electrical appliances, light rooms, etc.</td>
</tr>
<tr>
<td>Respiratory System</td>
<td>Heat and Air Conditioning</td>
<td>We breathe in air with our lungs, which the heart then circulates through our body, and then exhale the used air. A building takes in air, heats it, cools it and blows it into rooms. Then “old” air is returned to the furnace to be cleansed.</td>
</tr>
</tbody>
</table>
### Comparison Chart #2
#### Photo Analogy

<table>
<thead>
<tr>
<th>Human Body</th>
<th>Building</th>
<th>My Building Parts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin &amp; Hair</td>
<td>Outside Building Walls and Roof</td>
<td></td>
</tr>
<tr>
<td>Skeleton</td>
<td>Structural Framework</td>
<td></td>
</tr>
<tr>
<td>Digestive System</td>
<td>Plumbing</td>
<td></td>
</tr>
<tr>
<td>Nervous System</td>
<td>Electricity</td>
<td></td>
</tr>
<tr>
<td>Respiratory System</td>
<td>Heat and Air Conditioning</td>
<td></td>
</tr>
</tbody>
</table>
THIRD GRADE
LESSON NO. 3    DIFFERENT KINDS OF HOMES

LENGTH OF LESSON:  30 - 60 Minutes

EDUCATIONAL OBJECTIVES:

A. Learn about different types of homes
   English/Language Arts
   • Meaning and communication
   • Voice
   • Skills and processes
   Science
   • Construct new scientific and personal knowledge

B. Learn how climate and geographic location affect housing types
   English/Language Arts
   • Depth of understanding
   • Ideas in action
   • Inquiry and research
   Social Studies
   • Geographic perspective
   • Economic perspective
   Science
   • Use scientific knowledge from the earth and space sciences in real-world contexts

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Order is the arrangement and organization of elements to help solve visual and functional problems.
Form follows function is a design approach where the form of the building is determined by the functions of its spaces and its parts.

Nature is a model for architectural forms and shapes.

Climate and the natural environment influence design decisions.

Past, current and future technologies influence design decisions.

MATERIALS

1. Drawings (included) of the following structures for discussion and coloring (make copies):
   - Apartment
   - Castle
   - Town House
   - Duplex House
   - Farmhouse
   - Earth Sheltered House
   - Hut
   - Igloo
   - Mobile Home
   - Teepee
   - Single-Family House

2. Construction paper (blue, green, purple, red, orange, yellow)
3. Pencils or crayons in various colors

VOCABULARY (See glossary for definitions)

1. Apartment
2. Town House
3. Duplex house
4. Igloo
5. Mobile home
6. Teepee
7. Earth Sheltered House
Third Grade ◆ Lesson Three

ACTIVITY

A. Begin with a visual presentation of a large castle and a small hut. The teacher can use the provided drawings as an overlay to project on a wall or screen as he/she asks questions:
1. Large Castle - “Can you imagine living here?”
2. Small Hut - “Or here?”

B. Ask students as a group to brainstorm a list of types of “homes.” Write the list on the chalkboard. The following list may supplement the students’ list. Show pictures (included) of the houses to the class.
4. Farmhouse  8. Hut

C. Using the drawings provided, have a classroom discussion about the differences between types of homes. How many families can live in each unit? How many “homes” can exist in each building type?

D. Discuss how houses differ due to climate, geography and location. Some homes in Arctic areas are made from ice (igloos). Some homes are lightweight and portable because their owners move around a lot (tents, teepees). Earth Sheltered Houses take advantage of the constant temperature of the earth. These types of homes are less expensive and use less energy to build. Large cities have tall apartment buildings permitting many people to live near each other. Deserts or farm areas generally do not have tall buildings. Explain that large homes or castles are very expensive to build, use more energy to build, and generally have a lot of land around them, while smaller homes can be grouped together into neighborhoods. Smaller homes also cost less to build, take less energy to build and use less energy to operate.
E. Color is important when designing a house. Sometimes the color of a house matches its environment because it is constructed of unpainted materials from the environment. Igloos and huts are some examples. Show students blue, green and purple paper and explain these are “cool” colors. Show them red, yellow and orange paper and explain these are “warm” colors. Dark colors soak up heat, making them good color choices for homes in cold climates. Light colors reflect heat and are good choices for warm climates. Ask the students to describe where color can be used on a house, and what colors often are used on the outside walls, shutters, decoration, trim, roof, etc.

F. Ask the students to choose a house type from the drawings provided. After the students have added color to their drawing with pencils or crayons, they will describe their finished house to the class.

TEACHER’S EVALUATION

A. Through class discussion, determine whether there is an understanding about why different types of homes occur in different locales.

B. Evaluate how each student describes the color added to his or her drawing and if the color choices are logical.
Third Grade ♦ Lesson Three

Castle
Condominium
Third Grade Lesson Three

Duplex House
Farmhouse
Single-Family Houses
Apartment
Third Grade ◆ Lesson Three

Teepee
Igloo
Third Grade ◆ Lesson Three

Hut
Mobile Home
EDUCATIONAL OBJECTIVES:

A. Explore the influences of culture, technology and climate on different types and styles of houses
   - English/Language Arts
     - Meaning and communication
     - Depth of understanding
     - Inquiry and research
   - Social Studies
     - Geographic perspective
     - Economic perspective
   - Science
     - Use scientific knowledge from the earth and space sciences in real-world contexts

B. Develop an understanding of how culture, technology and climate have influenced the development and use of different house materials
   - Social Studies
     - Geographic perspective
   - Science
     - Use scientific knowledge from physical sciences in real-world contexts
     - Use scientific knowledge from earth and space sciences in real-world contexts

ARCHITECTURAL PRINCIPLES:

Design is accomplished by combining the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Form follows function is a design approach where the form of the building is determined by the function of its spaces and its parts.
Nature is a model for architectural forms and shapes.

Symbolism is an important means of visual communication for architecture.

Sustainable design of the built environment protects the natural environment.

Social structure, culture and the built environment have a direct influence on one another.

Climate and the natural environment influence design decisions.

Architecture satisfies emotional and spiritual needs in addition to physical needs.

Past, current and future technologies influence design decisions.

MATERIALS

1. Images of different types of structures (included):
   - Adobe/Clay homes - Desert regions
   - Huts (vines, leaves, trees) - Rainforest regions
   - Igloos - Arctic regions
   - Log cabins/Lumber homes - Deciduous forest regions
   - Stone house (quarried) - Area with rock deposits
2. “Sample Housing Region Chart” and “Examples of Sub-Categories” (included)
   - make copies for each student

VOCABULARY (See glossary for definitions)

1. Adobe
2. Arctic
3. Deciduous
4. Desert
5. Quarried
6. Rainforest
ACTIVITY

Use drawings of structures as visual aids in A-D.

A. Describe how the geography and climate of a region determine what local building materials and locations are available for a house:
   1. Arctic regions - snow and ice (igloos)
   2. Rainforest regions - vines, leaves, trees, etc.
   3. Desert regions - Adobe, clay (bricks)
   4. Deciduous forest regions - lumber
   5. Mountains - caves, stone

Help the students discover why housing materials change in different climates. Ask why people in Alaska used ice to build their homes in the past. What has changed that allows people in Alaska to use brick and other materials to build their homes today? How has modern truck, ship, air and rail transportation made materials available where they were formerly unavailable? Today, we are returning to the use of materials which are manufactured locally to reduce the environmental impact which results from transporting materials long distances.

B. Guide students to identify specific materials used because of geological and environmental factors in the region:
   1. Example: baked earth hardened in the hot desert sun. In some areas, this concept has been expanded to the process of oven-baking natural clay found in the ground to make bricks;
   2. Example: concrete made from sand, cement, lime, water and stones. This strong building product was first developed and used by the ancient Romans;
   3. Example: stones, including sandstone and limestone. Stone, marble and granite are quarried in many regions and have been used since ancient times. Marble was used for most of the Greek temples. Limestone is found in many areas (in the U.S., particularly in Indiana).
   4. Example: wood has been the most popular building material because of its availability and ease of working with. The first prehistoric structures were made of wood.

C. Discuss specific use of materials due to cultural or symbolic reasons:
   1. Decorated lightweight fabrics or animal skins for nomadic tribes (easily transported);
   2. Stone, marble and granite have strength and permanence (government buildings, temples and churches).
D. Discuss how the influences of climate, culture and technology, as well as history, have determined different shapes and structures for human comfort:
1. Ice for igloos is readily available in Arctic regions and provides insulation from cold and shelter from winds;
2. Thick clay provides insulation from heat in hot areas;
3. Walls of woven leaves and fibers provide ventilation in tropical regions;
4. Wood (lumber) is plentiful in many regions, easily harvested and easily assembled into buildings, including log houses;
5. Construction of ancient structures depended on human and animal labor;
6. Historically, some tribes used natural forms for their homes - rocks and caves that were ideal for nomadic lifestyles, readily obtainable and low maintenance;
7. Technological changes have had great influence on materials used for building structures, such as the development of iron and then steel that allowed larger buildings to be built more quickly;
8. Materials previously unavailable became available with innovations in transportation.

E. Using the "Sample Housing Region Chart" and "Examples of Sub-Categories" (included):
1. Review the various regions of the United States, e.g., West Coast, Southwest, Midwest, Southeast, Northeast, etc. Ask students to think about other parts of the U.S., and the world as well, and add them to their own Housing Region Chart. Have students review examples of sub-categories climate, cultural types, building materials and housing types and expand the list. Then have students fill in the blanks on the chart for each region listed.
2. Follow-up activity: Lead a discussion on how technology has changed historical regional/cultural housing types, e.g., new types of materials, transportation, availability of materials.

TEACHER’S EVALUATION

A. Review the completed charts as a group.
Third Grade ♦ Lesson Four

Igloo

Hut
Adobe/Clay House

Stone House (Quarried)

Log Cabin
### Sample Housing Region Chart

This chart may be expanded to include other locations.

<table>
<thead>
<tr>
<th>Climate</th>
<th>Culture</th>
<th>Housing types</th>
<th>Materials</th>
<th>Housing Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northeast</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Southeast</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Southwest</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Midwest</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northwest</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arctic</td>
<td>Urban</td>
<td>Ice</td>
<td>Igloos</td>
<td></td>
</tr>
<tr>
<td>Desert/Arid</td>
<td>Hispanic</td>
<td>Vines</td>
<td>Huts</td>
<td></td>
</tr>
<tr>
<td>Rain Forest</td>
<td>Native American</td>
<td>Lumber (wood)</td>
<td>Caves</td>
<td></td>
</tr>
<tr>
<td>Temperate</td>
<td>Asian</td>
<td>Clay</td>
<td>Wood framed</td>
<td></td>
</tr>
<tr>
<td>Variable</td>
<td>European</td>
<td>Tile</td>
<td>Cement</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cement</td>
<td>Steel</td>
<td></td>
</tr>
</tbody>
</table>
THIRD GRADE
LESSON NO. 5

HOUSE LINKAGES

LENGTH OF LESSON: 60 Minutes

EDUCATIONAL OBJECTIVES:

A. Learn how houses are linked with things in the outside environment
   Social Studies
   - Historical perspective
   - Geographic perspective
   Science
   - Use scientific knowledge from physical sciences in real-world contexts
   - Construct new scientific and personal knowledge

B. Understand the way linkages join houses together into a community
   Social Studies
   - Geographic perspective
   Science
   - Construct new scientific and personal knowledge
   - Use scientific knowledge from physical sciences in real-world contexts

C. Be able to understand public utilities that serve houses and be familiar with
   alternatives to public utilities
   English/Language Arts
   - Meaning and communication
   - Depth of understanding
   - Inquiry and research
   Social Studies
   - Geographic perspective
   Science
   - Construct new scientific and personal knowledge
   - Use scientific knowledge from physical sciences in real-world contexts
   Visual Arts
   - Analyzing in context
ARCHITECTURAL PRINCIPLES:

Design is experienced through human sensory perception.

Form follows function is a design approach where the form of the building is determined by the functions of its spaces and its parts.

Social structure, culture and the built environment have a direct influence on one another.

Climate and the natural environment influence design decisions.

Past, current and future technologies influence design decisions.

MATERIALS

1. Pencils in various colors
2. Drawing paper
3. Erasers

VOCABULARY (See glossary for definitions)

1. Linkage
2. Utilities
3. Geothermal Heating
ACTIVITY

A. Explain that most houses are not isolated but are connected to their surroundings. The connections may be visual - looking in and out through the windows - or may be functional. Functional linkages may exist through connections of side walls, the existence of a street network or through public utilities that link houses to be part of an entire community and city.

B. List on the chalkboard the purposes of a window. These include looking in and looking out, allowing fresh air into a room, as well as other ways of linking the interior and exterior of a house.

C. Discuss the importance of the window and its functions. What functions are missing if a room is lacking a window? For example, without windows, people cannot see outdoors from the inside or look into a home from its exterior. When looking in, we see a closed and confined space. When looking out through the same window, we see a very different scene - natural light and more open spaces. Without a window, a ventilation/fan system may be used to air out a room.

D. What other aspects of the home share similar “in/out” relationships? What important functions are accomplished with the use of phone lines or water pipes? Phone lines enable people to talk with others no matter where they may be. How can we talk to others who are far away without phone lines? Water pipes enable us to cook, clean, bathe, heat our homes, etc. How would we get water in and out of our homes without water pipes?

E. Discuss public utilities that come to most homes:
   1. Telephone lines
   2. Water lines
   3. Sewer lines
   4. Electrical lines
   5. Gas lines

F. Discuss alternatives to public utilities:
   1. Telephone lines - cellular phones
   2. Water lines - wells dug in the ground
   3. Sewer lines - septic fields
   4. Electrical lines - windmill power, solar power, generator
   5. Gas lines - fireplace heating, geothermal heating
G. Discuss how public utilities join homes together: homes are connected to central lines that service many homes. List the types of areas that do not have every type of public utility – farms, remote residences, etc.

H. Two Activity Options:
   Activity #1 - Inside/outside:
   Create two drawings. On one sheet, have the students draw a picture of the view looking through a window from the house exterior to the inside. On another sheet, draw a picture looking through the window from the inside to the outside.

   Activity #2 - Public utilities:
   Draw a picture of a house showing where utility lines/pipes come in and out of the house - either above or below ground. Add light switches, electrical outlets, faucets and heating registers to the picture. Draw the same house showing the alternatives to the utilities discussed in Activity F.

TEACHER'S EVALUATION

A. Evaluate each student’s drawings to verify visual linkages through windows as well as an understanding of various utility linkages.
THIRD GRADE
LESSON NO. 6                    HOW WE USE OUR HOME

LENGTH OF LESSON:                30 - 60 Minutes

EDUCATIONAL OBJECTIVES:

A. Understand the activities that occur in the rooms within a house
   English/Language Arts
   • Meaning and communication
   • Depth of understanding
   Social Studies
   • Geographic perspective

B. Learn about historic and cultural differences in the rooms within a house
   English/Language Arts
   • Meaning and communication
   • Depth of understanding
   • Inquiry and research
   Social Studies
   • Historical perspective
   • Geographic perspective

ARCHITECTURAL PRINCIPLES:

Form follows function is a design approach where the form of the building is
determined by the function of its spaces and its parts.

Symbolism is an important means of visual communication for architecture.

Visual thinking is a key to awareness of the built environment.

Social structure, culture and the built environment have a direct influence on
one another.

Design is experienced through human sensory perception.
Climate and the natural environment influence design decisions.

Architecture satisfies emotional and spiritual needs in addition to physical needs.

Past, current and future technologies influence design decisions.

MATERIALS

1. Room/Activity Chart (included) - make two copies for each student
2. Blackboard or whiteboard

VOCABULARY (See glossary for definitions)

2. Bathroom 5. Dining room 8. Living room

ACTIVITY

A. 1. Begin with a discussion of some early inhabitants of the region where the students live. Ask the students what they know about these people. Were some of them forest or cave dwellers? Who were the early settlers of the region?

Did Native Americans live in the region?
• Introduce the differences between a tribe and a family.
• Why were some people nomadic (moving according to the season and weather changes or following herds for hunting)?

2. Ask how people used their homes. Discuss hut, lean-to, teepee, cave, pueblo or other regionally based early forms of shelter that can be visualized by the students.
• Was there a kitchen? Bathroom? Bedrooms?
• The fire area was the center or focal point of early shelter. It provided warmth and nourishment.
3. Discuss how customs changed as generations passed. Homes no longer had to be moved due to climate or food as with nomadic tribes. Now, families move due to job changes or the desire to have a larger home or different type of home.

4. How did inventions change homes? The invention of plumbing changed the kitchen and bathroom. The invention of electricity eliminated oil lanterns and added other conveniences. Ask students if they can think of any other modern conveniences that have changed homes (hint: plumbing, window glass, furnaces, air conditioning, etc.). When sawmills were invented, people were able to build with wood boards, which are easier to handle than logs. What other inventions have changed homes?

B. Pass out Room/Activity Chart and ask each student to write some of the activities that occur in each room of a house.

C. After each student’s list is established, pair up the areas with various unsuitable activities (examples: bathroom - chop vegetables; dining room - take a bath; garage - eat a meal; kitchen - fix a bike) and ask students why these activities are not suitable for that room. (Example: The kitchen is not suitable for fixing bikes because counters need to be kept clean for preparing food).

D. Have the students discuss the reasons each room is used for its particular function. (The dining room has a table and chairs that make eating a meal easy; the bathroom has a bathtub, running water and privacy).

E. Ask the students to compare the way they use these rooms with people who live in other parts of the world.

F. As homework, have each student take home a blank copy of the chart. The students should ask their parents, grandparents or guardians if they use or have used any of these rooms for a different purpose than the usual and fill in the chart accordingly. (Example: Some grandparents who lived in a different country may not have had indoor plumbing, affecting the manner in which they used their kitchen and/or bathroom).

TEACHER’S EVALUATION

A. Students turn in homework assignment charts, which are evaluated for completeness.
**Room/Activity Chart**

<table>
<thead>
<tr>
<th>Areas of a home and their uses</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rooms</td>
<td>Activities</td>
</tr>
<tr>
<td>Living Room</td>
<td></td>
</tr>
<tr>
<td>Kitchen</td>
<td></td>
</tr>
<tr>
<td>Dining Room</td>
<td></td>
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<tr>
<td>Bathroom</td>
<td></td>
</tr>
<tr>
<td>Bedrooms</td>
<td></td>
</tr>
<tr>
<td>Garage</td>
<td></td>
</tr>
<tr>
<td>Basement</td>
<td></td>
</tr>
</tbody>
</table>
THIRD GRADE
LESSON NO. 7
DRAW YOUR HOME

LENGTH OF TIME: 30 - 60 MINUTES

EDUCATIONAL OBJECTIVES:

A. Increase the awareness of the spaces in a home and how they function
   Science
   • Use scientific knowledge from physical sciences in real-world contexts
   Visual Arts
   • Analyzing in context
   • Arts in contexts

B. Develop a basic understanding of a two-dimensional floor plan drawing
   Science
   • Use scientific knowledge from physical sciences in real-world contexts
   Visual Arts
   • Analyzing in context

C. Be able to draw a simple floor plan of a home
   Visual Arts
   • Analyzing in context
   • Performing

ARCHITECTURAL PRINCIPLES:

Order is the arrangement and organization of elements to help solve visual and
functional problems.
Form follows function is a design approach where the form of the building is
determined by the function of its spaces and its parts.
Mass creates form, which occupies space and brings into being a spatial
articulation.

Visual thinking is key to awareness of the built environment.
Design is experienced through human sensory perception.

Architecture satisfies emotional and spiritual needs in addition to physical needs.

MATERIALS

1. Pencils
2. Pencils in various colors
3. 18 x 24-inch grid paper (to help students draw straight lines)
4. Ruler
5. Sample drawing of floor plan diagram

VOCABULARY (See glossary for definitions)

1. Floor plan

ACTIVITY

A. Tell the students they will draw a picture of their home, and to do so, need to spend a minute thinking about the rooms in their home. Ask them where their family spends the most time, and which room they consider to be the family favorite. Explain how this room is considered to be the “center” of the home. Ask them to talk to the class about the center of their home. Is it where people cook or eat? Is it where they watch TV? Do different family members have different centers in the home?

B. Tell the students to describe their own “center” of the home. What makes it a special space? Is it the view from the windows, the way it looks, the sounds they hear or the quiet of the room, the presence of others, or the cooking aromas? Ask the students how they feel when they are in their center of the home.
C. Tell the students they are going to draw several pictures of their home showing the view as if they were flying above in a helicopter and looking straight down at the floor. The teacher should offer help as students work on their drawings. For their first picture, the students should begin by drawing the “center” of their home, showing the walls, doors, windows and furniture. What shape is the room? Give each student a copy of the sample floor plan diagram (included) to use as a reference when doing the drawings. Tell them their home will not look exactly like the home in the sample floor plan diagram but should follow its format.

D. Once everyone has drawn a floor plan of the “center” of his/her home, tell the students they will draw a second floor plan showing the surrounding rooms. Do the rooms connect through the doors? Do they have windows or doors to the outside? Is there a second floor with a stairway up from the first floor?

E. Encourage students to talk about how they access various rooms. For example, “I walk through the dining room to get to the kitchen,” or “The bathroom is down the hallway.” Have the students label each room with its name. Also have them add some furniture to the drawing.

F. Give the students a piece of grid paper and ask them to take their drawings home with them that night. For homework, have them draw a new drawing of their home from observation rather than from memory.

TEACHER’S EVALUATION

A. Students’ floor plans should include a representation of their home, including standard rooms (kitchen, bathroom, etc.) along with doors, windows and furniture. Assess the drawings done at home as compared with the drawings done from memory at school. Are the drawings done at home more complete? Did the in-school drawings indicate a good recollection of the actual home floor plan?
Floor-Plan Diagram
THIRD GRADE
LESSON NO. 8   DESIGN YOUR OWN HOME - PART 1

LENGTH OF LESSON:  60 Minutes

EDUCATIONAL OBJECTIVES:

A. Expand an understanding of their own current home into the design of a home they create
   English/Language Arts
   • Meaning and communication
   • Depth of understanding
   • Ideas in action
   • Inquiry and research
   Social Studies
   • Inquiry
   • Public discourse and decision making
   Science
   • Construct new scientific and personal knowledge
   • Reflect on the nature, adequacy and connections across scientific knowledge
   Visual Arts
   • Performing
   • Creating
   • Analyzing in context
   • Connecting to other arts, other disciplines and life

B. Develop the ability to express their conceptual ideas in a drawing
   Visual Arts
   • Performing
   • Creating
   • Analyzing in context
   • Connecting to other arts, other disciplines and life
ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Order is the arrangement and organization of elements to help solve visual and functional problems.

Form follows function is a design approach where the form of the building is determined by the function of its spaces and its parts.

Symbolism is an important means of visual communication for architecture.

Visual thinking is a key to awareness of the built environment.

Social structure, culture and the built environment have a direct influence on one another.

The creative process is basic to design.

Aesthetics is the artistic component of architecture.

Architecture satisfies emotional and spiritual needs in addition to physical needs.

Past, current and future technologies influence design decisions.

MATERIALS

1. "My Building Program" chart (included). Make one copy for each student.
2. Construction paper
3. Scissors
4. Pencils
5. Student floor plan made in Lesson No. 7
6. Drawing paper
VOCABULARY (See glossary for definitions)

1. Building program
2. Creative
3. Design
4. Freehand sketch

ACTIVITY

A. Each student should have the floor plan he/she drew of his/her own home in Lesson No. 7 to use as reference for this activity. Tell the students they will have an opportunity to design their own new home, and that the word “design” means to create from their own imagination. Tell them they can imagine the type of home they would like to have. It can be very different from their home now, or it may be similar. The floor plan of their current home will help remind them of some of the rooms that a home needs.

B. To begin, tell each student to think about what types of rooms will be in the home and how large these rooms will be. They can add whatever types of rooms they want. Will they be small, medium or large? Explain that the “My Building Program” chart (included) is a list showing rooms and their sizes that will aid in the design of the actual home. The student should include the name of each room, its size (small, medium or large) and what furniture should go in the room. Students may add additional rooms to the chart.

C. Remind the students to be creative in thinking about the rooms for their home. Perhaps they want a special room, like a “music listening” room or a “video game” room, that is different from the usual rooms in a home.
D. Ask students to draw a freehand sketch (not using rulers) of the rooms in the home they are designing. Decide how these rooms will be organized. What room will be the first all will see when they walk in the front door? Think about how to get from one room to another - through doors or a hallway.

E. Students also can cut out construction paper circles and ovals and label each with a name of one of their rooms. This will help the students plan the different room locations by moving the labels around until they are happy with the room arrangement.

TEACHER’S EVALUATION

A. Compare the Building Program to the freehand sketches drawn. Does the freehand sketch show an understanding of the room sizes and relationships?

B. Rooms listed on the Building Program should be included on the final sketches.
## My Building Program

<table>
<thead>
<tr>
<th>Rooms</th>
<th>Size (Small, Medium, Large)</th>
<th>Furniture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Living Room</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kitchen</td>
<td></td>
<td></td>
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<tr>
<td>Bathroom</td>
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<tr>
<td>Bedroom</td>
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</tbody>
</table>

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THIRD GRADE
LESSON NO. 9      DESIGN YOUR OWN HOME - PART 2

LENGTH OF LESSON: 60 Minutes

EDUCATIONAL OBJECTIVES:

A. Be able to observe the surroundings that are not part of their current home and incorporate features into planning their own home design

   English/Language Arts
   • Meaning and communication
   • Depth of understanding
   • Ideas in action
   • Inquiry and research

   Social Studies
   • Inquiry
   • Public discourse and decision making

   Science
   • Construct new scientific and personal knowledge
   • Reflect on the nature, adequacy and connections across scientific knowledge

   Visual Arts
   • Performing
   • Creating
   • Analyzing in context
   • Connecting to other arts, other disciplines and life

B. Develop the ability to express their conceptual ideas in a drawing

   Visual Arts
   • Performing
   • Creating
   • Analyzing in context
   • Connecting to other arts, other disciplines and life
ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Order is the arrangement and organization of elements to help solve visual and functional problems.

Form follows function is a design approach where the form of the building is determined by the function of its spaces and its parts.

Symbolism is an important means of visual communication for architecture.

Visual thinking is key to awareness of the built environment.

Social structure, culture and the built environment have a direct influence on one another.

The creative process is basic to design.

Aesthetics is the artistic component of architecture.

Architecture satisfies emotional and spiritual needs in addition to physical needs.

Past, current and future technologies influence design decisions.

MATERIALS

1. Drawings from Lesson No. 8
2. 18 x 24-inch grid paper
3. Sample floor-plan diagram– make a copy for each student
4. Ruler
5. Pencils
6. Pencils in various colors
VOCABULARY (See glossary for definitions)

1. Floor plan
2. Freehand sketch

ACTIVITY

A. The teacher explains to the students that, using the freehand sketch made in Lesson No. 8 as a reference, they will now redraw their house design using grid paper, a ruler and straight lines, indicating windows and doors even more clearly. They will figure one grid as 1 foot of measurement, so by counting grids they will know how large to make a room or a piece of furniture.

B. Discuss with students the architectural components of a room. Using the classroom as an example, discuss how floors, walls and ceilings enclose a room. Talk about how doors allow people to get in and out of rooms and how windows let in light and fresh air from the outside. Also, discuss the hallway outside the classroom. Note how, sometimes, hallways are needed to get from one room to another.

C. Show students the example of a floor-plan diagram (included). Have students use their freehand sketch design from Lesson No. 8 to draw a more organized plan on grid paper. Explain that the bottom of the page is where the front of their house should be located. Using the freehand sketch, students should draw the same relationships among the rooms, using “wall” lines drawn in pencil around the exterior of the rooms. Help students understand they may need a hallway to get to some of the rooms. Ask students to label the rooms.

D. Then ask the students to insert doors and windows by either drawing a double line or erasing part of the wall line. Windows should be located on the outside walls. Tell students they have just drawn what is called a “floor plan.”
E. Using the floor plan included, show students how they may “walk” through the house and look out the windows. Encourage students to show their plans to the class and discuss how they can imagine “walking through” their house using doors and hallways. Also have them indicate where they can look out of windows.

F. If desired, the students also can draw furniture on their floor plans.

G. Each student should explain his or her floor plan to the class.

TEACHER’S EVALUATION

A. Students should demonstrate an understanding of a floor plan. Evaluate student participation in discussion, particularly their ability to walk through their home indicating doors and windows.
Third Grade ♦ Lesson Nine

Floor-Plan Diagram
EDUCATIONAL OBJECTIVES:

A. Be able to observe the surroundings that are not part of their current home and incorporate features into planning their own home design
   - English/Language Arts
     • Meaning and communication
     • Depth of understanding
     • Ideas in action
     • Inquiry and research
   - Social Studies
     • Inquiry
     • Public discourse and decision making
   - Science
     • Construct new scientific and personal knowledge
     • Reflect on the nature, adequacy and connections across scientific knowledge
   - Visual Arts
     • Performing
     • Creating
     • Analyzing in context
     • Connecting to other arts, other disciplines and life

B. Develop the ability to express their conceptual ideas in a drawing
   - Visual Arts
     • Performing
     • Creating
     • Analyzing in context
     • Connecting to other arts, other disciplines and life
Third Grade ♦ Lesson Ten

C. Learn to analyze and critique their own ideas
   English/Language Arts
   • Meaning and communication
   • Ideas in action
   • Inquiry and research
   Social Studies
   • Inquiry
   • Public discourse and decision making
   Science
   • Construct new scientific and personal knowledge
   Visual Arts
   • Analyzing in context

D. Develop the ability to do a drawing in the proper proportions
   Mathematics
   • Patterns, relationships and functions
   • Geometry and measurement
   Visual Arts
   • Performing
   • Analyzing in context

ARCHITECTURAL PRINCIPLES:

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Past, current and future technologies influence design decisions.

MATERIALS

1. 18 x 24-inch grid paper
2. Pencils in various colors
3. Rulers
4. Markers
5. Photos of different types of houses (included)
6. Floor-plan drawings from Lesson No. 9

VOCABULARY (See glossary for definitions)

1. Elevations
2. Floor Plan

ACTIVITY

A. The teacher shows the class photographs of different types of houses (included) and explains the way houses look can vary greatly – some are one floor and some are two or more floors. Also explain that houses can be constructed with different materials, and in different colors and styles of architecture.

B. Discuss the types of materials students might choose for the outside of the homes they are designing. Such materials can include brick, stucco, wood, aluminum siding or stone. Also, discuss size and types of windows, as well as the rooms in which they will be located.
C. The teacher should ask students to think about the shape of the roof for the house they are designing, pointing out the various roofs on the buildings in the photographs (included). Do they prefer high, pitched roofs or low, flat roofs? Explain that pitched roofs are used because they allow rain and snow to easily drain off the roof. Flat roofs on homes may be more common in desert areas.

D. Ask the students to think about what they want the front, side and rear views of their houses to look like. These are called the "elevations." Each elevation shows the outside wall with windows and doors, as well as any other feature that is on that wall, such as planters and porches.

E. The teacher hands out each student’s floor plan from Lesson No. 9. Give the students grid paper, rulers, and pencils and/or markers in various colors. The students are then instructed to draw a picture of each of the "elevations" of their house design, making sure windows and doors are shown, as well as the selected exterior materials for the house. Students also should be given the opportunity to draw gutters, downspouts, chimneys, porches and any other house details they want to include.

F. After each student has completed his/her drawing, he/she should describe it to the class. The class can invite parents for a special evening, where all of the final house plans and elevations are put on display.

TEACHER’S EVALUATION

A. The teacher reviews how each student was able to develop the building elevations from the floor plan of the previous lesson, and how well the building elevations are developed to show windows, doors, etc.

B. The teacher should also evaluate how well each student was able to conceptually analyze his/her own home design.
Third Grade ♦ Lesson Ten

Victorian House
Georgian Colonial House
California Mission-Style Bungalow
Cape Cod House
Third Grade ♦ Lesson Ten

English Tudor House
American Bungalow
Log Cabin