

Architecture Through the Ages

Grade Level: Second Grade/Art

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Length of Unit: Six Lessons [45 minute sessions- architecture projects two sessions each]

I. ABSTRACT

Through the use of art and mathematics, students will learn about the art of architecture while studying four well-known structures around the world. This study will also lend to an awareness of similarities and differences of architecture through the ages. These lessons are intended to incorporate into existing units in the various second grade World History topics.

II. OVERVIEW

- A. Concept Objectives
 - 1. Develop an awareness of similarities and differences of architecture in various times and places.
 - 2. Develop an appreciation for the use of elements of design in architecture.
- B. Content from the *Core Knowledge Sequence*
 - 1. Architecture of the Parthenon, The Great Stupa, Himeji Castle, and the Guggenheim Museum.
 - 2. Elements of line, shape, and symmetry
- C. Skill Objectives
 - 1. Name and describe basic qualities of line.
 - 2. Draw a symmetrical figure.
 - 3. Identify lines of symmetry.
 - 4. Know location and time period of each architectural structure.
 - 5. Identify special features of each structure.

III. BACKGROUND KNOWLEDGE

- A. For Teachers
 - 1. www.greatbuildings.com
- B. For Students
 - 1. Quality of line and shape from First Grade

IV. RESOURCES

- A. Crosbie, M. *Arches to Zigzags: An Architecture ABC*. New York: Harry N. Abrams, Inc., 2000. ISBN 0-8109-4218-6
- B. Laden, N. *Roberto: The Insect Architect*. San Francisco: Chronicle Books, 2000. ISBN 0-8118-2465-9

V. LESSONS

Introductory Activity: Before you begin talking about architecture, read the books, *Roberto: The Insect Architect* and *Arches to Zigzags: An Architecture ABC*, to the class. This will give them an idea about what architects do and let them see some of the most famous architectural structures in the world. To extend this activity, give students drawing paper and let them build their dream city on paper.

Lesson One: A Line By Any Other Name Is Still a Line

- A. *Daily Objectives*
 - 1. Concept Objective

- a. Develop an appreciation for the use of elements of design in architecture
2. Lesson Content
 - a. Recognize lines as horizontal, vertical, or diagonal.
3. Skill Objective(s)
 - a. Name and describe basic qualities of line.
- B. *Materials*
 1. Chalkboard/ Chart Paper
 2. White art paper
 3. Ruler
 4. Crayons or markers
- C. *Key Vocabulary*
 1. Line- a mark or stroke made on a surface
 2. Horizontal line- a line that goes side to side
 3. Vertical line- a line that goes up and down
 4. Diagonal line- a line that leans
- D. *Procedures/Activities*
 1. Introduction of Line (adapted from *What Your Second Grader Needs to Know* by E.D. Hirsch, Jr.)
 - a. On the chalkboard or chart tablet have a cloud shaped figure drawn in the middle.
 - b. Ask students to describe the drawing. Now explain that by adding lines we change the look of our picture.
 - c. Draw two vertical lines under the shape. Tell them these are vertical lines. Ask them to make a vertical line in the air with their hands. Find examples of vertical lines in the classroom.
 - d. Draw a horizontal line across the bottom. Tell them this is a horizontal line. Ask them to make a horizontal line in the air and find examples of horizontal lines in the classroom.
 - e. Draw a ladder against the tree and tell the students these are diagonal lines. Ask them to make a diagonal line in the air and find examples in the classroom.
 - f. Discuss other places where the students may see these three types of lines. Make a list to display in the classroom.
 - g. There are other lines, too, so spend a little time talking about zigzag, curved, spiral, and wavy lines. Show examples. Have the students draw them in the air.
 2. Go Zigzag
 - a. Using the book, *Kids Art Work* by Sandi Henry, students will produce a line design.
 - b. Each student will draw a zigzag line across the paper and duplicate that line approximately an inch below or above the original line. Tell the students it will look similar to a lightning bolt. Continue making zigzag patterns in different directions. Erase lines where they cross and overlap.
 - c. Use markers or crayons to color the designs.
- E. *Assessment/Evaluation*
 1. Students completed artwork. Check for lines that show the three line types.
 2. Find A Line worksheet [Appendix A]. This is a homework assignment for them to do with an adult at home. This will help them make a connection with line and architecture. Discuss their results the next day in class.

3. Quiz. Give students a blank sheet of paper and tell them the three types of lines one at a time. The students will draw the line that matches the definition.

Lesson Two: Symmetry and Lines of Symmetry

A. Daily Objectives

1. Concept Objective(s)
 - a. Develop an appreciation for the use of design in architecture.
2. Lesson Content
 - a. Understand symmetry and a line of symmetry.
 - b. Observe symmetry in the design of some buildings.
3. Skill Objectives
 - a. Draw a symmetrical figure.
 - b. Identify lines of symmetry.

B. Materials

1. Geometric Shapes drawn on large construction paper [circle, square, triangle]
2. 6x 6 white paper
3. Scissors
4. Ruler
5. Colored pencils
6. Magazines
7. Glue
8. Construction Paper Capital Block Letters – a set for each student and teacher
9. Appendix B- Alphabet Symmetry Worksheet

C. Key Vocabulary

1. Symmetry- being the same in size and shape
2. Line of symmetry- the point where an object can be divided having the same size and shape on both sides

D. Procedures/Activities

1. Introduce Symmetry
 - a. Display basic shapes that are symmetrical [circle, square, triangle]. Pre-fold the shapes so they may be easily folded during the demonstration.
 - b. Ask students how they would fold these shapes in order to have identical sides. After they have given suggestions, show the students the actual line of symmetry. Talk about why or why not their suggestions were correct.
 - c. Brainstorm for possibilities of other shapes that would be symmetrical and draw them on a chalkboard or chart paper.
2. Alphabet Symmetry
 - a. Pre-cut a class set of Alphabet Block Letters. Give one set to each student.
 - b. Show students how you can find lines of symmetry in some letters of the alphabet. Show A to the class and draw a line of symmetry with the ruler. This is a vertical line of symmetry. Ask them to look at the letter B and think about how it could be divided symmetrically. Have them draw that line.
 - c. Let students work in groups to symmetrically divide other letters in the alphabet. Have them make a stack of symmetrical letters and non - symmetrical letters. Talk about the results.

- d. A pencil paper task may also be done and is included in this unit as Appendix B.
3. Symmetrical Art- Beginners
 - a. Give each student a 6x 6 sheet of paper. Scissors, and pencil.
 - b. Fold the paper in half.
 - c. Draw a design or half of a shape on one side of the paper only. Remind students to draw darkly with their pencil.
 - d. When they are done drawing, fold the paper with the drawing on the inside. Use the blunt edge of the scissors to rub the pencil drawing onto the other side.
 - e. The students can add additional shapes to the one side and rub the paper again until they are satisfied with their design.
 - f. Color the symmetrical designs and display for others to see.
4. Symmetrical Art- Advanced
 - a. The teacher will prepare this activity in advance. Look through magazines for pictures with obvious symmetry [primarily architecture but faces and designs can also be used].
 - b. Cut the picture in half on the line of symmetry. Paste one of the halves on a sheet of drawing paper. [Since you have cut the design in half you can give the same picture to two students.]
 - c. Give each student one of the pictures and instruct them to draw the other identical side.

E. *Assessment/Evaluation*

1. Students' completed artwork may be used as a tool to assess understanding of symmetry.
2. Block Letter Cut-outs
3. Appendix B- Alphabet Symmetry Worksheet

Lesson Three: The Parthenon

A. *Daily Objectives*

1. Concept Objective
 - a. Develop an awareness of similarities and differences in architecture in various times and places.
2. Lesson Content
 - a. Architecture as the art of designing buildings
 - b. Symmetry and a line of symmetry
 - c. Symmetry in the design of some buildings
3. Skill Objectives
 - a. Know the location of the Parthenon
 - b. Recognize the Parthenon.
 - c. Identify the lines of symmetry in the Parthenon

B. *Materials*

1. World Map
2. Construction Paper
3. Paper Towel Rolls [8 for each student]
4. Corrugated cardboard roll
5. Rulers
6. Scissors
7. Paper clips

8. Hot glue gun [teacher use only]
 9. Poster Board [one for each student if possible]
 10. Popsicle sticks
 11. Markers and colored pencils
 12. Computer and Internet Access
- C. *Key Vocabulary*
1. Architect- a person who designs buildings
 2. Column-a pillar consisting of a base, shaft, and capital
 3. Base- the part of the column that holds up the pillar
 4. Shaft- largest part of the column in the center, looks like a tube
 5. Capital- the top of the column connected to the ceiling, sometimes decorative
 6. Frieze-a sculptured or richly decorated band such as on a building front
- D. *Procedures/Activities*
1. Where in the World is, The Parthenon?
 - a. Have students find Greece on the map. Talk about what they may already know about Greece.
 - b. Read a short book about Greece to familiarize your students with Greece and it's culture. One book suggestion is *Count Your Way Through Greece* by Jim Haskins and Kathleen Benson.
 - c. Look at The Parthenon at http://www.greatbuildings.com/buildings/The_Parthenon.html
 2. The Parthenon a building of stone.
 - a. Show pictures of the Parthenon and have books available from many sources to show different angles of the building. There are many websites and books that have pictures of this building [see bibliography].
 - b. Discuss the time period in which this structure was built. Ask them to note the special features of this building. What is it made of? How many columns? Note that other Greek structures mainly had a six-column front as compared to the eight columns of the Parthenon.
 - c. Point out the columns. They are symmetrical. Draw a diagram of a column on the chalkboard and label the three parts of the column [base, shaft, and capital]. Students can make their own column on a sheet of paper or cut it out of construction paper.
 - d. Give students pencil and paper to sketch The Parthenon as they see it. Remind them to pay attention to the symmetry of the building, drawing the line of symmetry on their paper.
 3. The Building of the Parthenon
 - a. Several weeks before doing this activity a note should be sent home with students asking for empty paper towel rolls. You can also use toilet paper rolls but you will need to fasten two together to get the height you will need to make a column.
 - b. Each student will build the front of the Parthenon by using paper towel rolls, corrugated cardboard, poster board, scissors, and hot glue.
 - c. At this point the students should have a good idea at what the front of the Parthenon looks like. Pictures should be displayed.
 - d. Model making the first column. Cut a piece of corrugated cardboard paper to fit the first roll by measuring the roll with a ruler. Cut a long strip of the cardboard and wrap the paper towel roll and cut off the excess. Tell the students to do the same to each roll. If you have a

problem temporarily securing the cardboard to the towel roll you can use paper clips on each end until you get ready to glue.

- e. After making all eight columns, use pieces of poster board to design the frieze on the front of the building.
- f. The teacher will need to supervise the final compilation, by running the hot glue gun. Glue the columns on to a longer strip of poster board in order for your project to stand up.

Note: Some projects may be too heavy to stand alone, so this can easily be remedied by making a brace on the back side of it with Popsicle sticks or cardboard.

4. Write about the Parthenon.
 - a. Prepare a writing center with paper and pencil to give the students an opportunity to write about what they have learned about The Parthenon from literature and class discussion.

E. *Assessment/Evaluation*

1. Student drawing of the Parthenon front. Check for the line of symmetry.
2. The Parthenon front project.
3. Writing assignment

Lesson Four: The Great Stupa

A. *Daily Objectives*

1. Concept Objective(s)
 - a. Develop an awareness of similarities and differences in various times and places.
2. Lesson Content
 - a. Architecture as the art of designing buildings
 - b. Line, shape, and special features of the Great Stupa
3. Skill Objectives
 - a. Know the location of the Great Stupa
 - b. Recognize the Great Stupa.
 - c. Identify the special features of the Great Stupa

B. *Materials*

1. World Map
2. Round Balloons [one for each student or group]
3. Newspaper
4. Prepared papier mâché mix or liquid starch
5. Empty Peanut Can [one for each student or group]
6. Off-white paint
7. Paint brushes
8. Poster Board [1"x 4" strips- 3 for each student or group]
9. Computer and Internet

C. *Key Vocabulary*

1. Architect- a person who designs buildings
2. Sphere- three-dimensional circular shape

D. *Procedures/Activities*

1. The Great Stupa and Buddha
 - a. Locate Sanchi, India on a world map. Discuss with your class when and why this structure was built and it's function as a temple.

- b. Show the picture of the Great Stupa and read the selection about it from *What your Second Grader Needs to Know*, by E.D. Hirsch.
 - c. Ask students to talk about the special features of this building and compare the similarities and differences of this building and the Parthenon.
 - d. Discuss the main feature of the half sphere shape dome. Discuss what a sphere is and other places they have seen this type of building.
2. Research the Great Stupa
 - a. Look at the Great Stupa at http://www.greatbuildings.com/buildings/Great_Stupa_at_Sanchi.html
 3. Construct the Great Stupa
 - a. Several weeks before this activity you will need to send a note home with students asking for peanut can donations. The use of the peanut can is optional, but the wide mouth and squatty shape is ideal for the shape of the building.
 - b. With the newspaper, make thin strips about ½” wide for papier mâché. Pass out a can and balloon to each group or student. Blow the balloon up enough to fit inside the can.
 - c. Begin to cover the balloon with prepared papier mâché mix or liquid starch. Place balloon inside the can and papier mâché the can, also.
 - d. Paint the structure with an off-white paint.
 - e. Make the entrance to the Great Stupa with the poster board strips.
 4. Write about the Great Stupa
 - a. Prepare a writing center with paper and pencil to give the students an opportunity to write about what they have learned about the Great Stupa from literature and class discussion.

E. *Assessment/Evaluation*

1. Great Stupa Project
2. Writing assignment.

Lesson Five: Himeji Castle

A. *Daily Objectives*

1. Concept Objective
 - a. Develop an awareness of similarities and differences in various times and places.
2. Lesson Content
 - a. Architecture as the art of designing buildings
 - b. Line, shape, and special features of the Himeji Castle
3. Skill Objectives
 - a. Know the location of the Himeji Castle.
 - b. Recognize the Himeji Castle.
 - c. Identify the special features of the Himeji Castle.

B. *Materials*

1. Card Stock [10 sheets per student]
 Dimension for the cut paper [box and lid]
 1st box- 8.5” x 8.5” and 8.25” x 8.25”
 2nd box- 7.5” x 7.5” and 7.25” x 7.25”
 3rd box- 6.5” x 6.5” and 6.25” x 6.25”
 4th box- 5.5” x 5.5” and 5.25” x 5.25”
 5th box- 4.5” x 4.5” and 4.25” x 4.25”

2. Markers or colored pencils
 3. Scissors
 4. Paper cutter
 5. Glue
 6. Computer and Internet
- C. *Key Vocabulary*
1. Architect- a person who designs buildings
- D. *Procedures/Activities*
1. Introduction of the Himeji Castle
 - a. Find the place where the Himeji Castle is located on a map. Discuss with your class when and why this structure was built.
 - b. Let students know this building is also known as “The White Heron” because the people thought it resembled that bird.
 - c. Show them pictures of this building and discuss special features. The look of this building is that of a triangle with the top cut off. Each level gets smaller as it goes higher. The tip of each rooftop points up. It was designed that way because the Japanese believe that will ward off evil spirits.
 2. Research the Himeji Castle.
 - a. Look at the Himeji Castle at http://www.greatbuildings.com/buildings/Himeji_Castle.html
 - b. Use the internet web site to take a virtual tour of the Castle.
 - c. Have students use encyclopedias and other books to find out other things about the castle.
 3. Construct the Castle
 - a. Each student will need 10 squares of card stock quality paper each being a different size. With boxes you are going to make a top and bottom to the box. These measurements for the top and bottom squares will vary by .25”. You will need two sheets for each box. The following measurements are needed. Fold paper following instructions from the website: <http://www.kid-at-art.com/htdoc/lesson16.html> . Depending on the level of your students you may wish to already have the pattern drawn on the card stock. Stack the boxes on top of each other. Secure them to each other with glue.
 - b. Have each student make roof tops that fit their boxes out of colored paper. Each roof should have four roofs [one on each side of the box] in order to give dimension to your structure. Pay attention that the students make their roofs have the cut off top and pointed up edges.
 4. Writing about the Himeji Castle
 - a. Prepare a writing center with paper and pencil to give the students an opportunity to write about what they have learned about the Himeji Castle from literature and class discussion.
- E. *Assessment/Evaluation*
1. Himeji Castle Project
 2. Writing Assignment

Lesson Six: The Guggenheim Museum in New York City

- A. *Daily Objectives*
1. Concept Objective

- a. Develop an awareness of the similarities and differences in various times and places.
 2. Lesson Content
 - a. Architecture as the art of designing buildings.
 - b. Line, shape, and special features of the Guggenheim Museum.
 3. Skill Objective(s)
 - a. Know the location of the Guggenheim.
 - b. Recognize the Guggenheim.
 - c. Identify the special features of the Guggenheim.
- B. *Materials*
1. United States Map
 2. Modeling Clay or play dough [white]
 3. Construction paper [white] * this may replace the clay
 4. Paper Cups [black or dark]
 5. Straight pens [several for each student]
 6. Computer and Internet
- C. *Key Vocabulary*
1. Architect- a person who designs buildings
 2. Spiral- a line that curves into a circle
- D. *Procedures/Activities*
1. Introduction of the Guggenheim
 - a. Find the location of the Guggenheim on the map. Ask students if they have ever been to New York and if they have been to the Guggenheim.
 - b. Discuss the function of the Guggenheim as compared to the other three structures you have studied. Ask if the children have been to a museum before.
 - c. Discuss how Frank Lloyd Wright was the architect in charge of building this museum and how he wanted the building to be a work of art in itself.
 2. Research the Guggenheim
 - a. Look at the Guggenheim at http://www.greatbuildings.com/buildings/Guggenheim_Museum.html
 - b. In a computer center have students look at the website www.guggenheim.org The students can read about the history and architecture of the building.
 3. Constructing the Guggenheim
 - a. Each student will need one paper cup, preferably black, and a handful of modeling clay or play dough. Clay can be replaced with construction paper if time or supply is a factor.
 - b. Having discussed the spiral shaped teacup design of the Guggenheim your students will make that spiral shape with the clay.
 - c. The student will need to pat out or roll out a ½” strip of clay. Wrap it around the cup leaving spaces so one can see the black cup. Fasten the clay to the cup with straight pens [teacher does this part with the student].
 4. Write about the Guggenheim
 - a. Prepare a writing center with paper and pencil to give the students an opportunity to write about what they have learned about the Guggenheim Museum from literature and class discussion.
- E. *Assessment/Evaluation*
1. Guggenheim project

2. Writing Assignment

VI. CULMINATING ACTIVITY

You are the Architect

Students will design their own building. They may use any type of materials they wish to construct the building or they may draw it. Instruct them to be safe and have parents help if they need to use tools or hot glue, etc. With each building the student will need to have a report given orally to the class. See Appendix C for report instructions.

VII. HANDOUTS/WORKSHEETS

- A. Appendix A-Find A Line
- B. Appendix B-Alphabet Symmetry
- C. Appendix C-You are the Architect

VIII. BIBLIOGRAPHY

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Name _____

Date _____

Find a Line

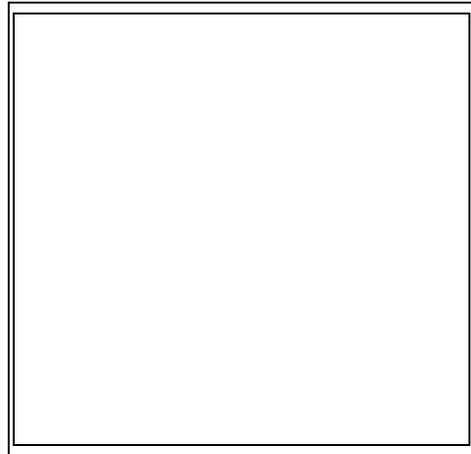
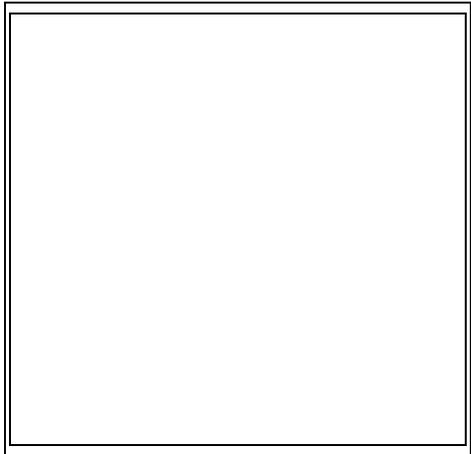
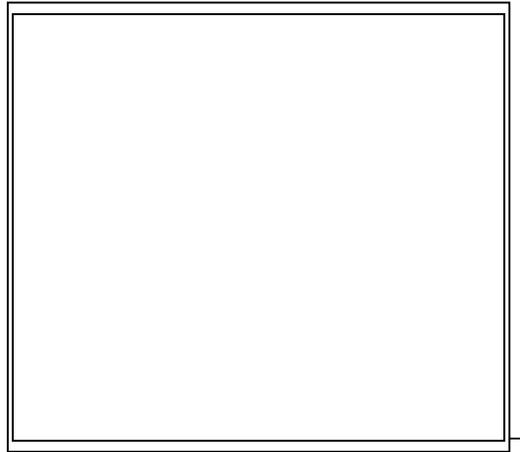
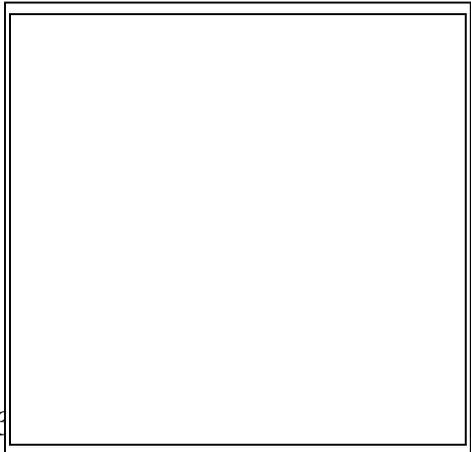
Directions: Spend an afternoon with an adult looking at buildings for the different kind of lines we have talked about in class. Write the type of line you find and draw that part of the building. Have fun!

Word List:

Diagonal Horizontal Vertical ZigZag Curved Spiral Wavy

1. _____

2. _____



Appendix B

ALPHABET SYMMETRY

Directions: Divide all the letters in the alphabet that can be divided symmetrically.

A B C D E F

G H I J K L

M N O P Q R

S T U V W X

Z

How many letters are symmetrical? _____

Appendix C

YOU ARE THE ARCHITECT

Directions: Write a report about your project. Please include the following items in your report. You can use this sheet for your notes.

1. List the materials used to make your project.
2. Describe the elements of architecture such as the type of line and shape.
3. Describe what your building is going to be used for.
4. List the similarities and /or differences in your building to one of the four we have discussed in class.

1.

2.

3.

4.