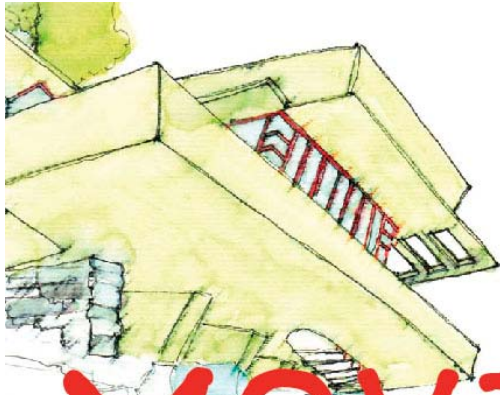


Explore Architecture with Moxie!



Cara Armstrong



MOXIE

THE DACHSHUND OF FALLINGWATER

There are lots of activities to try with Moxie. You can enjoy one or all of them, in any order you want. It's up to you. Have fun!

Please turn over this card for a few important guidelines before you get started.

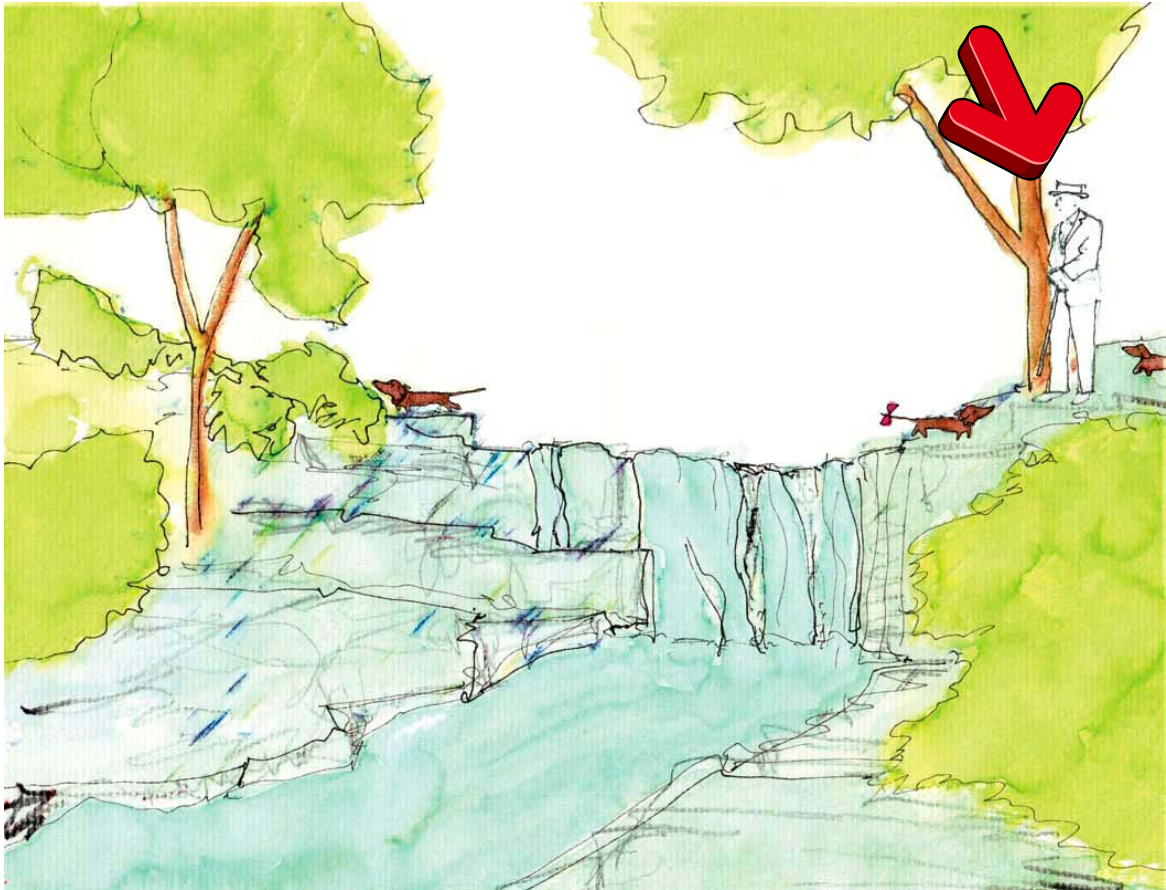
Explore Architecture with Moxie!

Recommended for Apprentices (kids) and their Master Builders (adults)

With this Kit, you and your apprentices can explore architecture by seeing, touching, listening, and doing.

All activities are based on the glossary found in **Moxie: The Dachshund of Fallingwater**. Each of the glossary words is represented by the book illustration on the **front** of the card with the word and its definition on the **back**.

Each word is also followed by cards with suggested activities that reinforce the word.



ARCHITECT

An **ARCHITECT** is a person who plans and designs buildings, and often supervises their construction.

Architect Activity:

Be an architect with your pet, or favorite animal, as your client.

See the original idea and other teacher created activities at www.kinderart.com/architecture/mypethouse.shtml



Frank Lloyd Wright thought a lot about how his clients, the Kaufmanns and their dachshunds, would use Fallingwater. He designed a house that allowed them to experience the outdoors, have places for quiet time, and also have spaces where they could celebrate. Think about your client, your pet or favorite animal, and what they might like to do in a house. Sleep? Chew a bone? Swim? Scratch? Sniff?

What you need:

- construction paper (any colors)
- a piece of construction paper or yarn (to act as a loop - see photo)
- a photo of a pet or favorite animal
- scissors
- felt tip marker
- glue

What you do:

1. Cut two equal rectangles out of construction paper.
2. On one of the rectangles, draw, then cut out, a door, being sure to only cut on three sides, leaving a "hinge" edge so that the door can open and close.
3. Glue the piece of paper with the door, onto the other piece of paper you cut out earlier, keeping the door free to open and close.
4. Glue the photo of the pet/animal doing one its favorite things (napping, eating, chewing a bone, etc.) behind where the door opens and closes.
5. Cut squares or rectangles out of a contrasting color of construction paper. These will become windows.
6. Glue the windows onto the house—think about where to locate them based on what's happening inside. Decorate the windows with a marker.
7. What kind of roof will the house have? A flat roof for basking in the sun? A sloped roof to play on? Cut a roof out of construction paper and glue it to the house.
8. Frank Lloyd Wright used stone to suggest the outside landscape to the Kaufmanns. Would your pet or animal appreciate a space-age material, the sand of the desert, logs from a forest? You can suggest any of those materials and more by drawing lines and shapes on your house.
9. Use a strip of construction paper (or a piece of yarn) to create a loop to hang the house from a hook on the wall.



Architect Activity:

Design with Nature: Build a Fairy House

Learn about the Fairy House series books and videos, get tips on how to build fairy houses, and learn how to hold a fairy house event at www.fairyhouses.com



Frank Lloyd Wright loved nature, as the Kaufmanns did, and Wright knew that they wanted something very special at Bear Run. He also knew that they loved the waterfall, and he decided to make it part of the new house. He also used stone to build Fallingwater in order to celebrate the natural rock outcroppings he saw at the site. What elements of the landscape would you celebrate? Like Wright and the Kaufmanns, fairies are also known for their love of nature. Can you design and build a small structure for the fairies to visit that celebrates nature?

What you need:

Any natural materials you find outside, such as:

- Sticks
- Bark
- Dry grasses
- Pebbles
- Shells
- Feathers
- Seaweed
- Pinecones
- Nuts

What you do:

1. First pick a site for your Fairy House. The base of a tree or the side of a rock could be just right. Close to the ground is usually best. Sometimes you may find a special place in the low branches of a tree or bush. Fairy houses can be built up against building foundations, in planters and in window boxes. Look for building areas in woods, beaches, meadows, and especially your own backyard! A small courtyard with plantings or along a pathway is fine, too.
2. Next, find natural materials to build your house – nothing artificial. Sticks, bark, dry grasses, pebbles, shells, feathers, seaweed, pinecones and nuts are just some of the materials you can use.
3. Be respectful of plants that are growing. Try not to disturb plants that are still living, such as ferns, mosses and flowers.
4. It's helpful to build your first fairy house against a tree trunk, bush, rocks or wall. A triangle or teepee shape is also an easier shape to construct for first time builders.
5. Then make a path leading to the front door – to guide the fairies into the house. (The most rustic construction looks like a home when a walkway is added.)
6. Like Wright designed furniture for Fallingwater, you can make furniture for your house. Dried milkweed pods with their fluffy seeds make lovely soft fairy beds. A large shell can be filled with water for a fairy plunge pool.
7. Once your Fairy House is done, you can look to see what other people have made. Talk to each other about your creations. Write about your fairy house and who might visit it, and/or draw pictures about it.



BUFFET

A **BUFFET** is a counter on which to place food or tableware, away from the dining table.

Buffet Activity:

Design a dining room for giraffes.

Frank Lloyd Wright designed the buffet in Fallingwater's dining room with the Kaufmanns' love of entertaining in mind. The buffet area allowed guests to serve themselves from the dishes of food lined up on its surface, and helped the guests to have a relaxed, family-style dining experience.

How would a dining room be built so that a giraffe would have a pleasant dining experience? Think about the design of the room itself; not just the furniture and objects in it. If the furniture is important to your design ideas, try to build it into the walls, ceiling, and floor so that it becomes part of the architecture.

What you need:

- Sketchbook or paper
- Pencil
- Colored pencils, markers, or crayons
- Imagination!



What you do:

Design and draw a dining room for giraffes. You may want to include your clientele (giraffes) in your picture, showing how they enjoy the room you've designed.

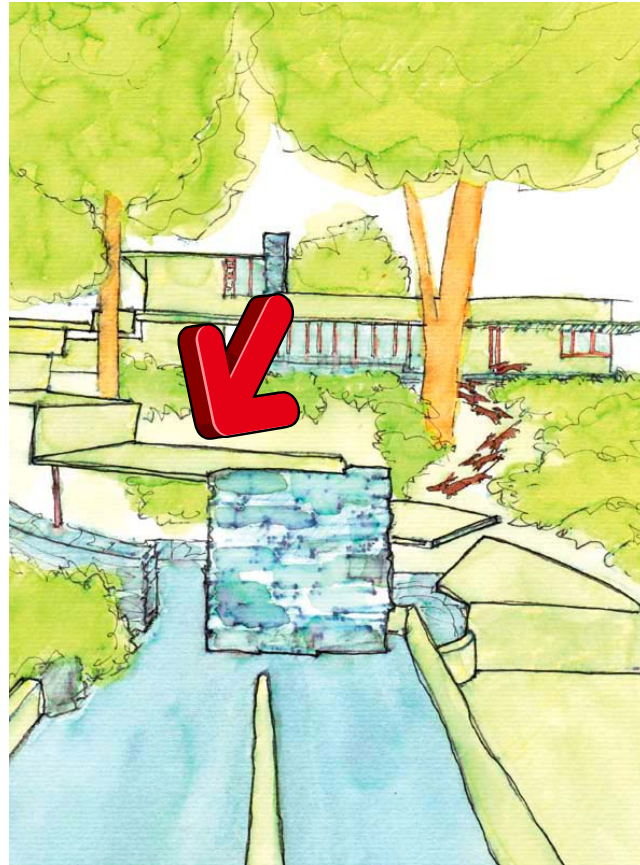
Some things you may want to consider about giraffes:

- They don't like to sit down when they eat.
- They have very long tongues (18 to 27 inches for an adult!)
- Every step a giraffe takes is 15 feet.
- They have excellent eyesight.
- An adult can eat up to 100 pounds of food per day, and drink 12 gallons of water in one sitting.
- They like to hang out in groups, just like the Kaufmanns.

Some design elements to think about:

- How will the room be lit?
- What size would the room need to be in order to be comfortable for a giraffe?
- Where would the surfaces need to be?
- What would the windows look like?
- What colors would work best in a giraffe's dining room?

*Other types of animals that might make interesting clients include: orangutans, anteaters, tree frogs, snakes, hummingbirds, opossums, and alligators. What other animals can you think of?



CANOPY

A **CANOPY** is an overhanging roof or covering.

Canopy Activity:

Structural Folding

You can find more hands on activities related to structure at

http://www.fallingwater.org/assets/13_The_Nuts_And_Bolts_Of_Architecture.pdf



To learn more information about the structural activity on the back and relate it to bridges, see

<http://scienceprojectideasforkids.com/http://scienceprojectideasforkids.com/a-paper-bridge/>

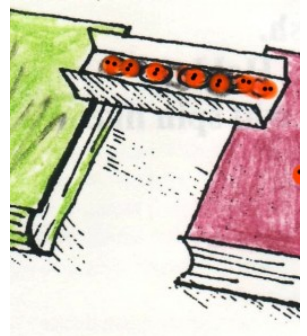
Folding a piece of material makes it stronger. This is the structural trick that makes crinkle-cut potato chips great for dipping. Their ridges, or folds, make them stronger and able to support more weight (more dip). At Fallingwater, the reinforced concrete is folded for extra strength. The most notable example is the stepped canopy over the walkway that connects the Main House with the Guest House. Think about a flat piece of paper or cardboard. It is not very strong, but if you fold the paper or cardboard so that it has sides, it becomes stronger and can be used as a fan or box.

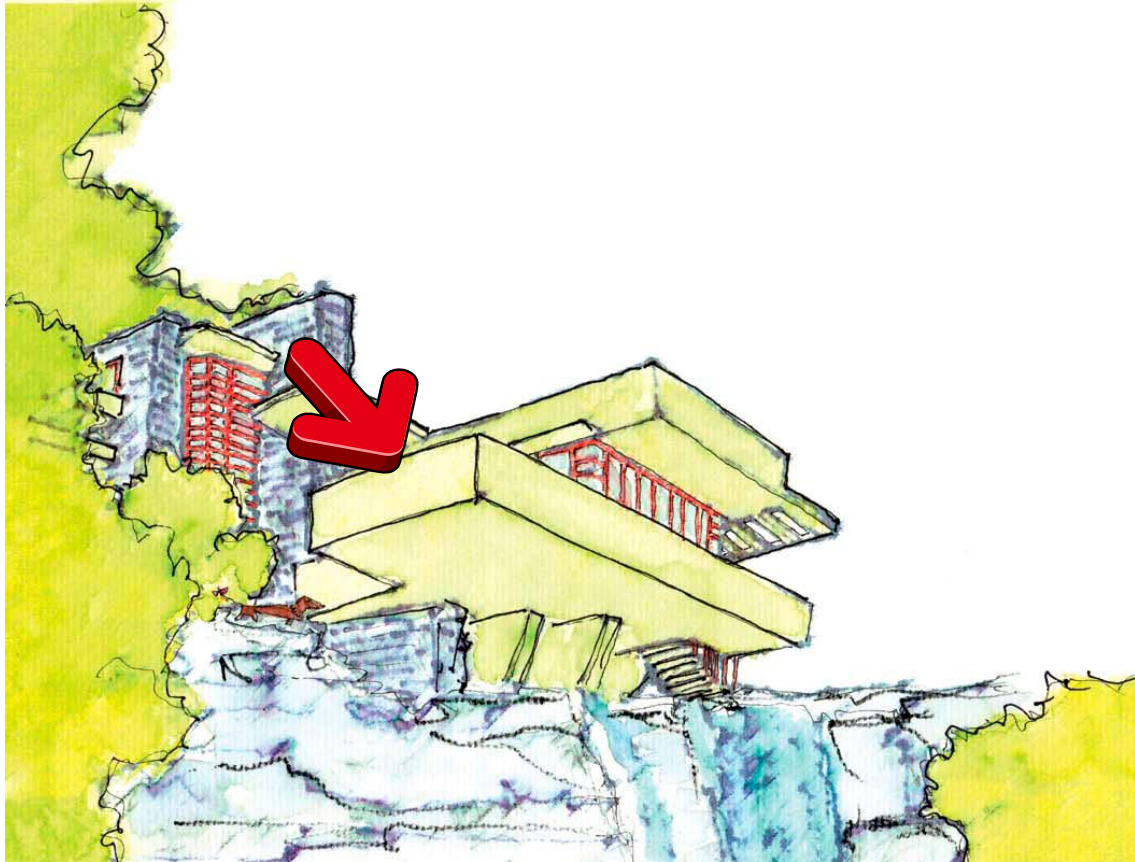
What you need:

- 2 books
- A piece of paper approximately 4" x 8"
- Coins or buttons

What you do:

1. Place two books about 6 inches apart—think of one as the Guest House and one as the Main House. Make a canopy across the gap between the books using a strip of paper about 4 x 8 inches. Place a button or coin in the center of the canopy. The result will be that the paper canopy collapses under the weight.
2. Remove the paper canopy and test how flexible it is. Do this by holding the ends of the canopy and try to bend it back and forth. You will find that the paper is very flexible, so much so that even the weight of a button or coin causes it to collapse.
3. An architect or structural engineer's job would be to change the paper canopy to make it less flexible and more supportive of added weight. One way to do this is to add sides to the canopy. Instead of adding parts to the paper, sides can be formed by folding the paper so that it has two sides as shown. Place the paper canopy across the gap between the books and add buttons or coins. How many will your paper canopy hold?
4. Test the flexibility of the canopy by holding its ends and trying to bend it back and forth as before. You will find that the folded sides make the canopy less flexible and more capable of holding added weight.





CANTILEVER

A **CANTILEVER** is a beam or other structural member that projects beyond its supporting wall or column.

Cantilever Activity:

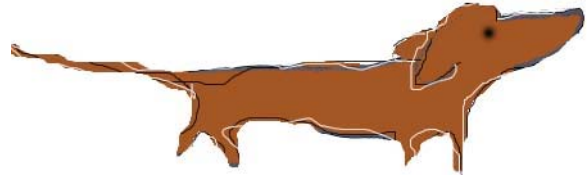
Be a Cantilever

You can find more hands on activities related to why buildings stand up at http://www.fallingwater.org/assets/08_Why_Buildings_Stand_Up.pdf

The cantilever is the basis for Fallingwater's structure. A **cantilever** is horizontal, like a beam, but is supported only at one end. Dachshund tails and tree branches are examples of natural cantilevers as they are only supported on one side. When you pull open a drawer, it becomes a cantilever supported by the weight and rigidity of the cabinet. The opened drawer can support a heavy load as long as the cabinet is heavy enough for gravity to hold it firmly in place. You can see what it feels like to be a cantilever with only a few books.

What you need:

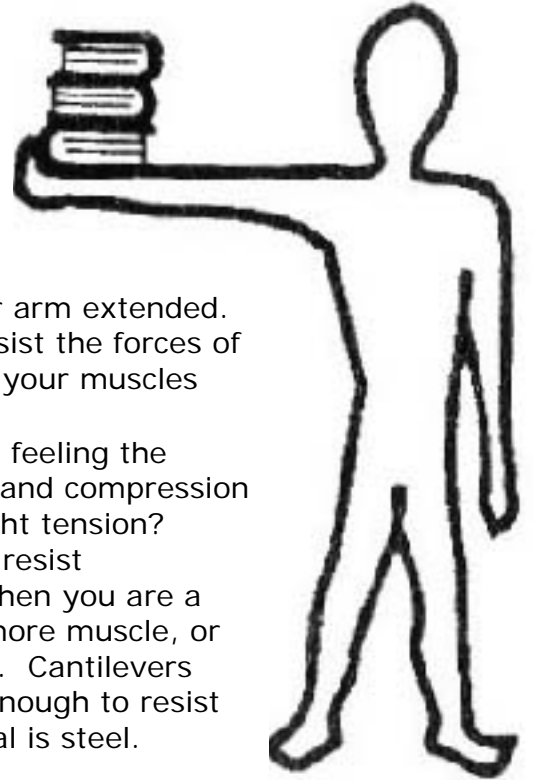
- Your body
- Books



What you do:



1. Hold a stack of books balanced on your head. Gravity is pushing the books down on the top of your head and your body is resisting the compressive forces of the load. You are supporting the books like a pier or column in a building.
2. Now, hold a stack of books with your arm extended. Your arm is a cantilever, trying to resist the forces of gravity pulling your arm down. Feel your muscles stretch—this is tension.
3. Repeat the activities and think about feeling the difference between tension (pulling) and compression (pushing). When did you have to fight tension? When did you need to stand tall and resist compression? Now you know that when you are a cantilever, you need to have much more muscle, or tensile strength, to hold up the book. Cantilevers must use materials that are strong enough to resist tension. At Fallingwater, that material is steel.





CASEMENT WINDOW

A **CASEMENT** window is hinged along its sides, and opens along its entire length.

Casement Window Activity:

Listen to the Building

You can find more about this activity at

http://www.fallingwater.org/assets/22_Its_Got_RhythmListen_to_the_Building.pdf

In Fallingwater, casement windows can be opened to allow the sounds of nature to enter the building. Rushing water, bird calls, and swishing leaves fill the rooms with the music of the natural surroundings. How do the sounds you hear in a space affect the way you feel inside it?

All buildings have sounds built into them, and these sounds (whether we make them happen or they occur on their own) can give us more information about how the buildings are constructed, and how we experience the spaces within.

What you need:

A paintbrush handle, ruler, stick, or *unsharpened* pencil



What you do:

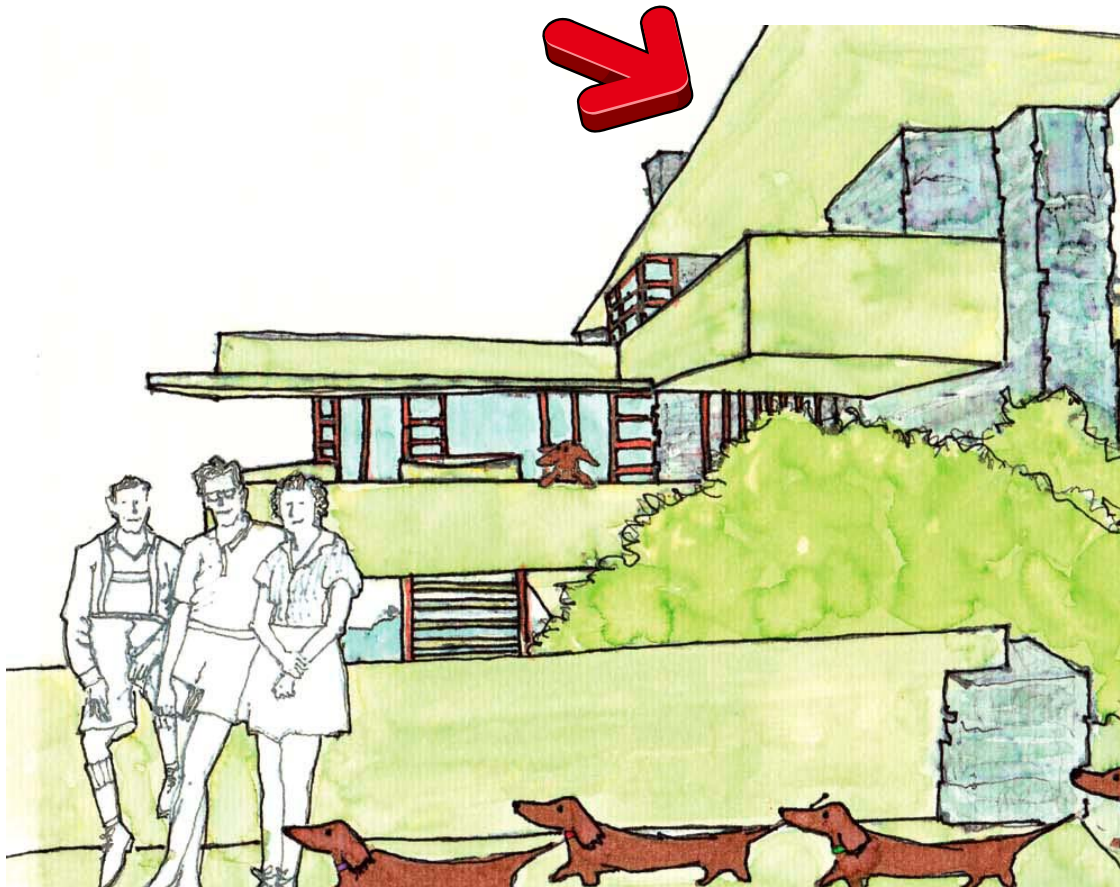
Think of all the ways sounds are made. Sound happens through vibrations, and there are many ways to make noises using what is all around us.



- **Knocking** on a surface makes a percussive sound. (drum, cymbal, xylophone)
- **Blowing** across a very sharp edge slices the moving air to make a whistling sound. (flute)
- **Raking** a stick or other object across a textured surface, such as a row of books, can make all kinds of zipper-like sounds. (washboard)
- **Strumming** is usually done on a tightened string. The skinnier and tighter the string, the higher it is in pitch. (guitar, bass)

Listening carefully, explore the sounds you can make in the building around you (be careful not to damage anything!) Some ideas include:

- **Knock on the walls** to discover not only the sounds of the different construction materials, but also where walls have hollow spaces or solid things behind them. Secret passageways have been discovered this way!
- **Run a stick** along the spines of books lined up on a shelf, or along the different spines of spiral-bound books, or along the textured patterns on walls (brick, tile, or other bumpy surfaces).
- Gently **drag your fingernails** across window blinds.
- **Stomp** the floors to discover the different sounds of flooring materials.
- Big or small: find things that are made of the same materials, but that differ in size. How do they sound different when you **tap** them?



EAVE

An **EAVE** is that part of a roof that projects beyond the wall.

Eave Activity:

Light and Shadow

To try more activities related to sun and shadow, visit

<http://solar.physics.montana.edu/ypop/Classroom/Lessons/Sundials/>

Check out the street art of Ellis Gallagher (aka Ellis G.) who creates chalk etchings of shadows of everyday, urban street objects.

<http://www.thirteen.org/sundayarts/chalk-artist-ellis-gallagher/81>

Frank Lloyd Wright made Fallingwater's eaves long enough to block the summer sun, but shallow enough to allow the winter sun to enter into the rooms to warm them. Have you ever noticed how the sun moves across the sky during the course of a day? You can see how the sun changes by drawing your own shadow at different times of day.

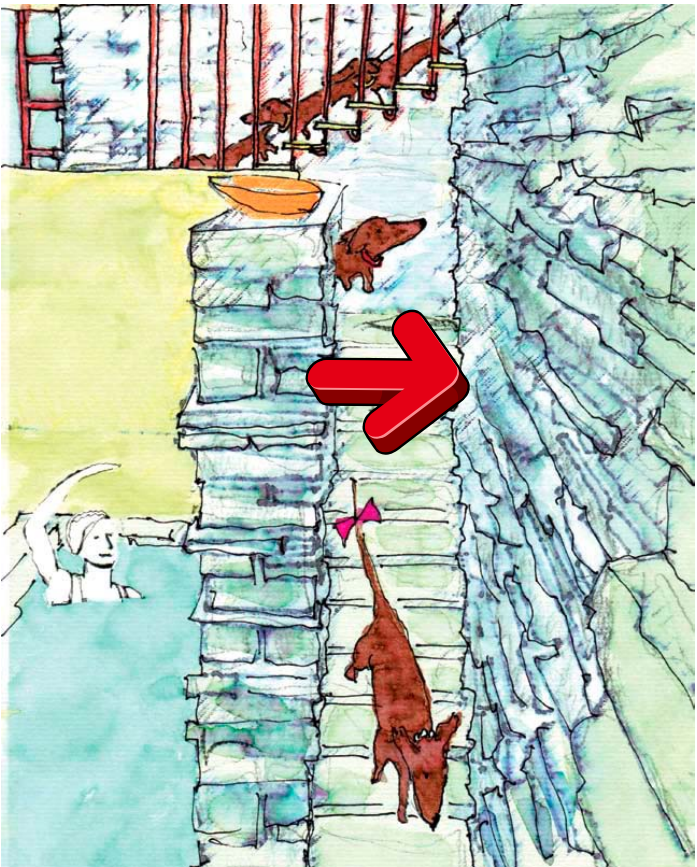
What you need:

- A friend
- Chalk in several colors (a thicker piece works best)
- A washable, smooth, outdoor surface
- A bit of early morning or late afternoon summer sun



What you do:

1. Find a good spot outside to draw, like on a sidewalk or driveway. Make sure you settle in a spot that isn't shady already; you'll need some good sunlight in order to make sharp shadows.
2. Find your shadow. Explore how your position and movements affect the shadow. Think about where the sun is in relation to where you're standing. Think about how you might make a fun shadowy shape on the ground.
3. Once you've found a position that will make an excellent shadow, hold still and have a friend trace it with chalk. Your friend can mark where you are standing by tracing your feet so that you can return to that position later. Once you're finished, switch roles and trace your friend's footprints and shadow.
4. Wait about an hour, then stand in the same place and position that you were in before, and trace each other's shadows again using a different color of chalk. Have they gotten bigger or smaller? What will happen if you come back in two hours? In three? By drawing shadows over time, you are tracking the movement of the sun, just like Wright did to create the eaves at Fallingwater.
5. Add details to one another's shadows. Go ahead and get silly with this part -- the more details the better. Add a string of pearls, a cape, or a tutu to your outlines. The crazier the better!
6. Still up for some more shadow play? People make great shadows, but don't forget about trees, toys, and pets (if you can get them to sit still for a few minutes!).



MASONRY

MASONRY is the art of shaping, arranging, and uniting stone, brick, building blocks, etc., to form walls and other parts of a building.

Masonry Activity:

Masonry Pattern Scavenger Hunt

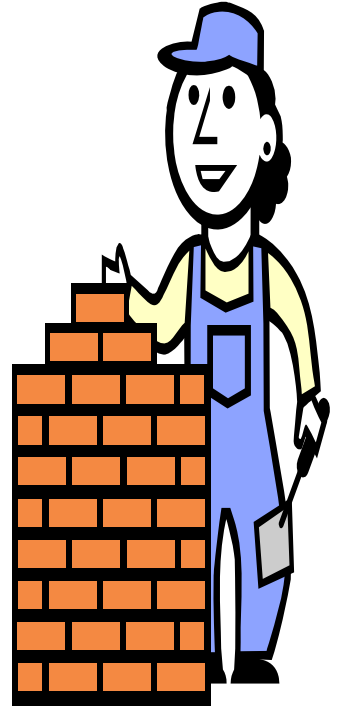
You can find more masonry patterns at

<http://plato.acadiau.ca/courses/educ/reid/Geometry/brick/plane1.html>

Fallingwater has irregular masonry patterns that create a natural look similar to the natural rock outcroppings found in its surrounding landscape. Learning to recognize how color, pattern, texture, and size create the overall appearance of buildings is important to understanding why places look the way they do. By locating visual clues and making sense of them, you can begin to appreciate architecture and decisions made by architects, urban planners, and engineers.

What you need:

- Buildings
- Paper, chalk, crayons, and a pencil
- Musical instruments (triangle, cymbals, drumsticks, blocks, etc.)



What you do:

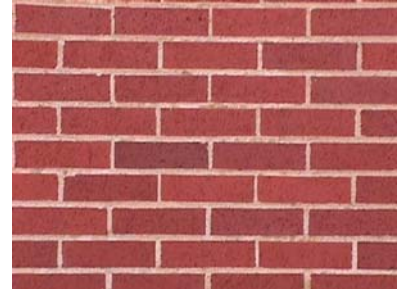
1. Look at the patterns at the bottom of the card. Now look at the architecture in your neighborhood. Can you find a building or sidewalk that uses masonry? Do a rubbing of the pattern onto a piece of paper using chalk or crayons. Do any match the patterns shown below? Can you find any that have different patterns?
2. Examine the outside of your library. Even if doesn't have masonry, all buildings contain shapes. Many building shapes take architectural forms as windows (squares), columns (lines), doors (rectangles), and towers (triangles) and often create patterns. Draw a picture of two of your library's patterns.
3. Can you make a rhythm up for the type of patterns using an instrument?



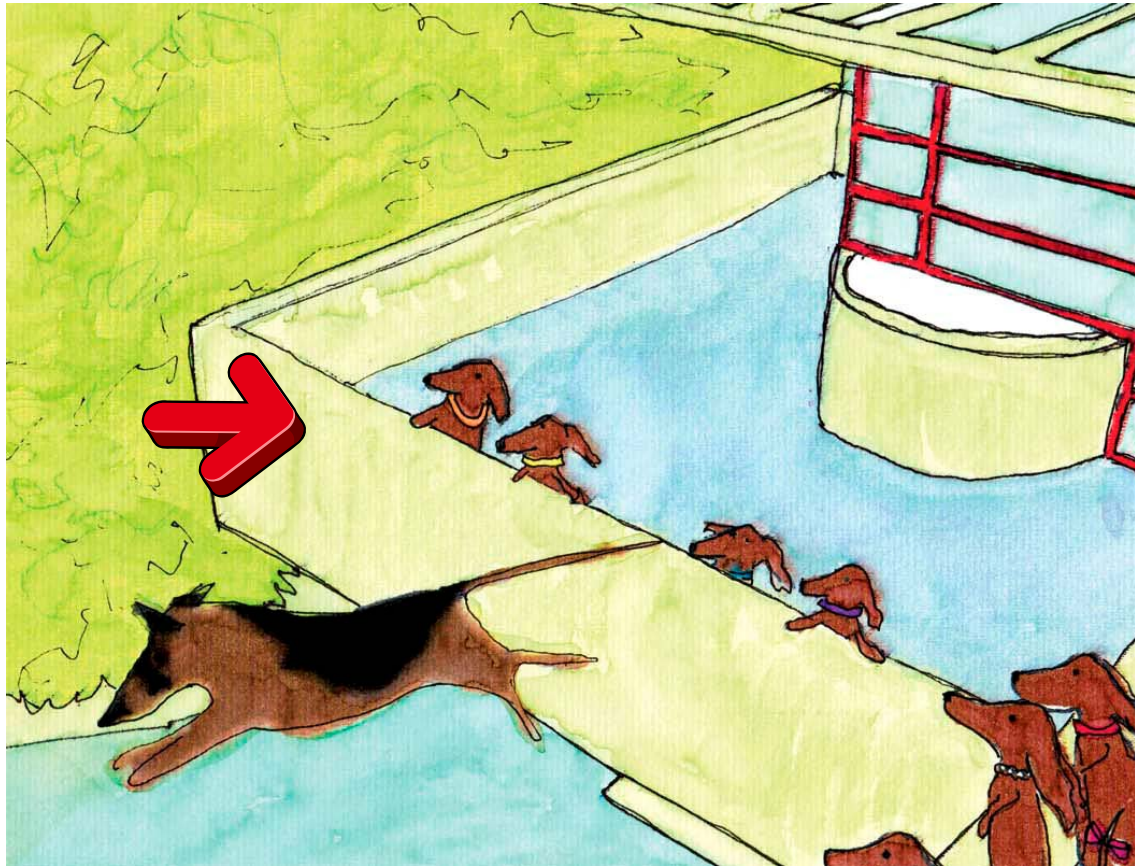
Stack Bond



Herring Bone



Running Bond



PARAPET

A **PARAPET** is a low guarding wall at a point of sudden drop, such as at the edge of a terrace.

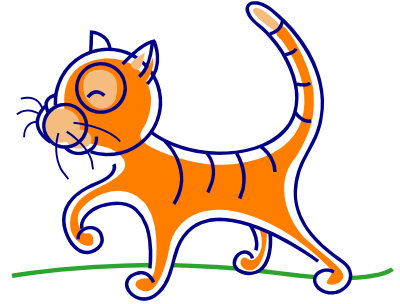
Parapet Activity:

Change your Perspective: Imagine Yourself as a Cat

Visit the Why Cats Paint Home Page for inspiration

<http://www.monpa.com/wcp/index.html>

To people, Fallingwater's parapet is the right height to look over and see the view without worrying about falling off the terrace. To the dachshunds who lived at Fallingwater, it was a wall that was over 3 times their height. To a German shepherd, it was a small hurdle easily jumped!



Can you imagine seeing the world from a lower point of a view? If a cat could draw, would it draw its surroundings differently than a human would? How would your library look from a cat's point of view? What, in the library, would be interesting to a cat? Suppose a magical spell is cast upon you and you are turned into a cat for one hour? What are you going to draw?

What you need:

- Imagination
- Paper, chalk, crayons, and/or pencils

What you do:

First, practice being a cat...

- Stretch
- Arch your back
- Extend your claws
- Roll over
- Sit up quickly
- Hunch down
- Stare at you friend
- Rub up against a table



Now, think like a cat...

- Where would a cat sleep in the library?
- Where could it find food?
- Where could it find water?
- What would it play with?
- Where would it go if didn't want to be bothered?
- What would interest a cat most in your library?
- What would it mostly likely try to avoid?
- Who would it try to make friends with?

Now that you are in “cat mind”, decide where in the library you would most like to “hang out” and what you would do. Take your drawing materials to that part of the library and draw it from your cat perspective.

When you've finished, look at your drawing. Were you able to take the point of view of a cat? How is a cat's perspective on things different from your own? How is this shown in your drawing?

To learn about a cat that really lived at a library, read **Dewey: There's a Cat in the Library!** Or visit www.deweyreadmorebooks.com



SASH

A **SASH** is the framework of a window.

Sash Activity:

Create a View Finder

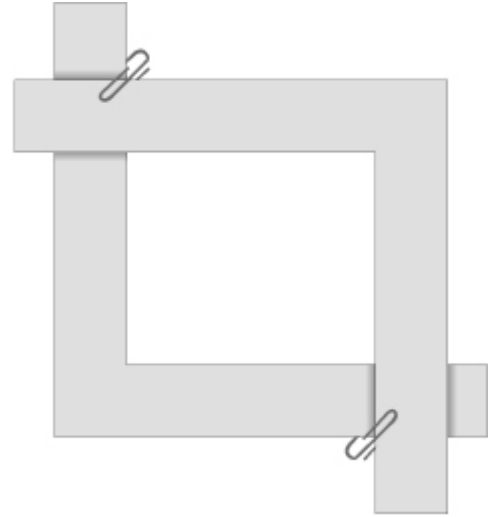
To learn more about view finders, visit

http://www.gettoknow.ca/en/lessons/lesson_09_viewfinders.pdf

Frank Lloyd Wright used sashes at Fallingwater to frame and crop views. He painted the metal frames red to really make you look at what was within the sash outline. You can make your own viewfinder to frame and crop what you look at.

What you need:

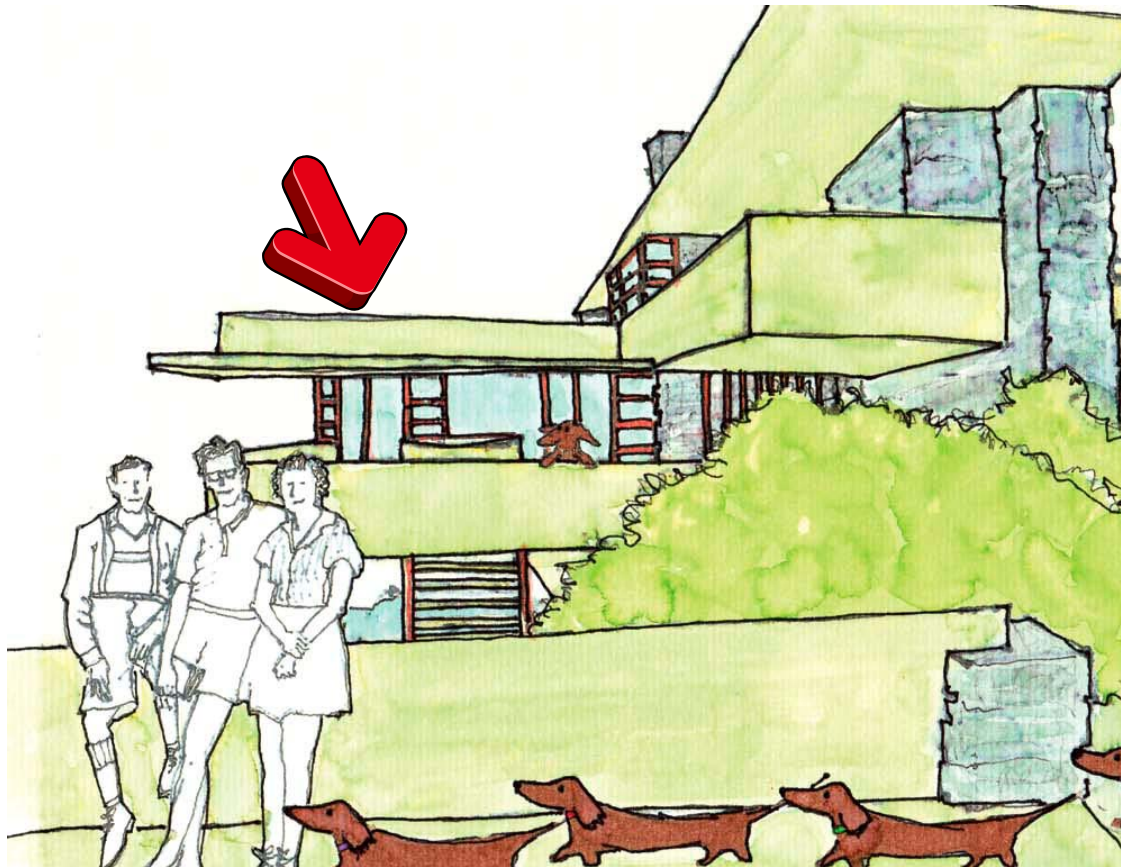
- 6" x 6" lightweight cardboard square
- Ruler
- Pencil
- Scissors
- Two paperclips
- Drawing paper
- Paintbrush
- Watercolors
- Jar of water
- Rag or paper towel



What you do:

1. With your pencil and ruler, draw two L-shapes along the edges of your cardboard. The width of your ruler is a good measurement to use.
2. Cut the L-shapes out. Now you have two halves of a frame. You won't need the small square that's left over.
3. Hold the shapes together to make a whole frame. What shapes can it become? What sizes?
4. Use your paper clips to join the L's together in a viewfinder shape you like.
5. Look at a book through your viewfinder. "Zoom out" by moving the view finder closer to your eye. What do you see? (Try not to pay attention to anything outside of your frame!) You probably see the whole book and part of the room around it. Next, "zoom in" by moving the viewfinder closer to the page. Do you see much more than a few words?
6. Now, use your view finder to search the room. What would make an interesting picture? Once you find something you like looking at, hold your viewfinder very still. Pretend the viewfinder is the frame of your picture. This means you shouldn't draw anything you don't see inside of it.
7. With your pencil and paper, draw the outline of everything you see inside your viewfinder. Fill your paper, and don't forget the details.
8. Use watercolors to make your picture colorful.
9. Ask a friend to give your picture a title.





TERRACE

A **TERRACE** is a flat roof or open platform (usually paved or planted) that adjoins a building.

Terrace Activity:

Draw Your Own House

To think about your own house, or any building, visit
http://www.fallingwater.org/assets/03_A_Sense_Of_Space.pdf

Frank Lloyd Wright designed Fallingwater's terraces to give the Kaufmanns an instant hint of nature. With their low walls, simple colors, and materials, they are very distinctive, and the amount of terraces at Fallingwater makes the house different from most houses.

All houses have lots of interesting shapes to see and draw. Houses also tell us something about the people who live inside them. Draw a picture of where you live — a house, a trailer, or an apartment building!

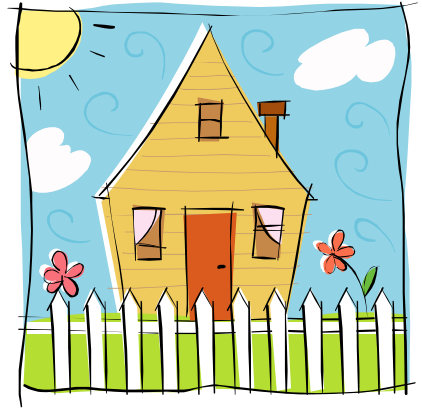
What you need:

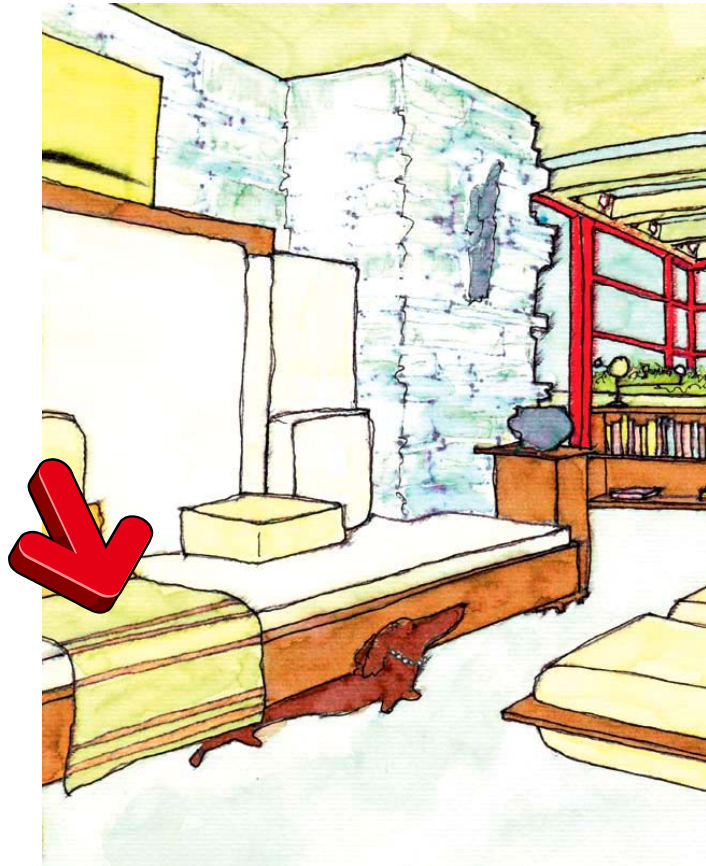
- Paper
- Pencils and/or markers



What you do:

1. If you can, take your paper, pencil or marker, and go sit outside where you live. Try to find an interesting place or point of view to observe your house, trailer, or apartment building while you draw. (If you can't actually sit in front of it, then try to draw it from memory.)
2. Before you begin to draw, study your house for a moment. Notice all the shapes in your house. What shape do you see the most? A square? A rectangle? Look for shapes that repeat. Look for unusual shapes.
3. Begin by drawing the largest shape you see in your house. Look for other large shapes and draw them too. Then draw the smaller shapes and details inside the larger ones. Continue working this way (from large to small) until you've drawn all the shapes you see in your house.
4. If there are trees or other things around your house, draw them too. Your drawing should fill the page. When your drawing is finished, share it with your family or classmates.
5. If you want to do more, color your drawing using oil pastels or watercolor paints. Search for other drawings and paintings of houses in art history books.





TEXTILES

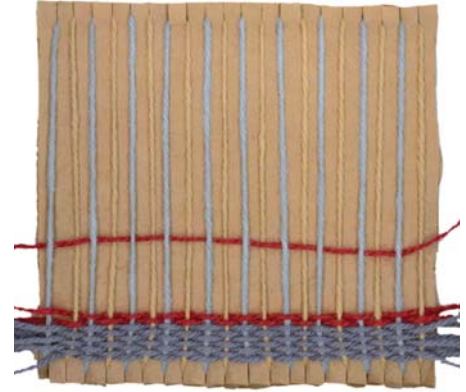
TEXTILES are woven fabrics, such as rugs, upholstery, and clothing.

Textile Activity:

Make Your Own Textile

To find more activities with Fallingwater's textiles, visit http://www.fallingwater.org/assets/Fallingwater_Fabric_And_Patterns.pdf

Fallingwater's textiles are special for many different reasons. Edgar Kaufmann, Jr. felt that they were important accents to Wright's architecture and that without the color and warmth they provided, Fallingwater looked cold and uninviting. Some of the textiles have traveled far distances, are very old, or tell stories.



You don't need expensive equipment to make textiles. A flat piece of cardboard or a cardboard box can easily turn into a loom that you can use to weave mug rugs, placemats or intricate tapestries.

What you need:

- a square of cardboard (about 6" x 6")
- three (or more) colors of thick yarn
- scissors
- a plastic comb with wide spaces
- a ruler

What you do:

Making the Loom

1. Hold the cardboard so the ridges are vertical. Cut notches every 1/4 inch on both ends. Be sure you make the same **odd number** of notches on the top and bottom edges.
2. To create the **warp**, or vertical threads of a weaving, wrap yarn around the loom. Use two different colors. Wrap one color of yarn around the loom, skipping every other notch. Repeat with the second color, filling the empty notches. This two color warp will help you keep track of "overs" and "unders." Remember not to make the warp too tight or it will be hard to weave.

Weaving

1. Cut yarn into pieces that are about 4 inches longer than the loom is tall (about 10 inches). These will form the weft, or horizontal threads, of the weaving.
2. Slide the ruler under all the strings of one color. Lift the ruler up and thread your first piece of yarn through the path you just made. Leave the ends of the yarn hanging off both sides.
3. Remove the ruler and switch colors. Slide the ruler under the threads of the second color this time. Lift up and thread the weft through.
4. Continue to weave back and forth in this way.
5. After 6 pieces of yarn have been woven, use the comb as a beater to push the yarn close together at the bottom of the loom.
6. Continue weaving until one side of the loom is full.
7. Flip the loom over and cut across the warp at the midpoint. At the top and bottom of the loom, tie warp pieces together two at a time so the weaving doesn't unravel. Congratulations! You've woven a textile.



WARDROBE

A **WARDROBE** is a cabinet for clothes. At Fallingwater they are built-in and cantilevered from the walls.

Wardrobe Activity:

Write and Illustrate Your Own Mini Book

To find out how to make other mini books, visit:

<http://library.thinkquest.org/J001156/makingbooks/minibook/index.htm>

http://www.ehow.com/how_5114346_create-mini-book.html

<http://www.lostbuttonstudio.com/downloads/minibooks.pdf>



Frank Lloyd Wright designed Fallingwater's wardrobes to be functional, but in his Narnia series, author C.S. Lewis used a wardrobe as a portal to another world. Create a character that uses Fallingwater's wardrobe (or other building feature) to be transported to another place. For example, in the book used for this activity, Corduroy the Bear steps onto an escalator and ends up in the furniture department of a store, thinking he is in a palace.

What you need:

- Paper
- Stapler
- Pencils
- Crayons or paint
- **Corduroy** by Don Freeman

What you do:

1. Make your own small 6-page booklet using half sheets of plain paper stapled together.
2. Read *Corduroy*. Note that Corduroy's adventure follows a format. First, Corduroy is in the toy department. Next, he goes searching for his lost button. Then, he steps onto an escalator, and ends up in the furniture department, thinking he is in a palace. Finally, he topples over a lamp, but the night watchman rescues him and returns Corduroy to the toy department.
3. Using your booklet, sketch in pencil the framework for a story following the format below. Spend about 10 minutes drawing one image per page, then add words and finish your drawings with crayons or paint.
 - Page 1—Your character is at home.
 - Page 2—Your character goes to Fallingwater.
 - Page 3—Your character enters a wardrobe at Fallingwater and lands in an unfamiliar place.
 - Page 4—Strange things happen!
 - Page 5—A superhero rescues your character.
 - Page 6—Your character is safe at home again.
4. Make a book cover with images of Fallingwater from www.fallingwater.org
5. Read your book to a friend.

