



Lesson Objective:

What factors are important in designing buildings to fit the way people use them?

A person’s sensory experience of a building can contribute to how comfortable they feel using it.

Lesson Description:

Students conduct a “treasure hunt” to find various elements of a building’s interior and exterior (for example, window sills, doorknobs, water fountains). Then students analyze their various sensory perceptions of these elements to decide if they are well designed to fit their needs.



Erin Silva/SAF

Lesson Goals and Achievement Criteria:

Goal: Students describe the parts of a building using their senses.

Outcome: Students write down how different parts of a building look, feel, smell and sound.

Goal: Students analyze the scale of the building in relation to their own height.

Outcome: Students measure elements of a building using their own height as one unit.

Goal: Students synthesize information about the scale of various building elements and use sensory experience to decide if the design of the building best fits their use of it.

Outcome: Students determine and recommend design changes to the building to better accommodate their use of the building.

Educators Notes:

An educator can be anyone! Teachers, parents, or any leader can implement these lessons.

Suggested Grade Levels:

K-3rd
(See Lesson Adaptations section for use with upper and lower grades)

Integrated Subjects:

Math
Science
Health

Lesson Duration:

Up to four one-hour periods

Materials:

- measuring tape
- paper
- pencils
- 3x5 cards
- bag (for cards)
- Building for People Treasure Hunt
- magnifying glass (optional)
- binoculars (optional)

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The Lesson:

Suggested Pre-Lesson: Discuss “What is design?” Ask students to bring in a functional object from home that demonstrates good design. Discuss how they use this object, and why they like its design. Is it because it is easy to use? Is it because they like certain decorative aspects such as the color? Compare which aspects of the object are about its form (they way it looks: the color, decoration, texture, etc.) and which aspects are about its function (how it is used: the blades cut, the handles allow you to pick it up, etc.) When do the form and the function work together the best?

Educators Notes:

Ideas for certain objects might be their favorite mug, an article of clothing, or their desk. Pictures of objects are encouraged if the actual object cannot be transported.

The student’s school is an ideal building for this lesson, however homes, sports complexes, or auditoriums will also work. Any building where they spend a lot of time!

Lesson 1: Design for Needs and Comfort

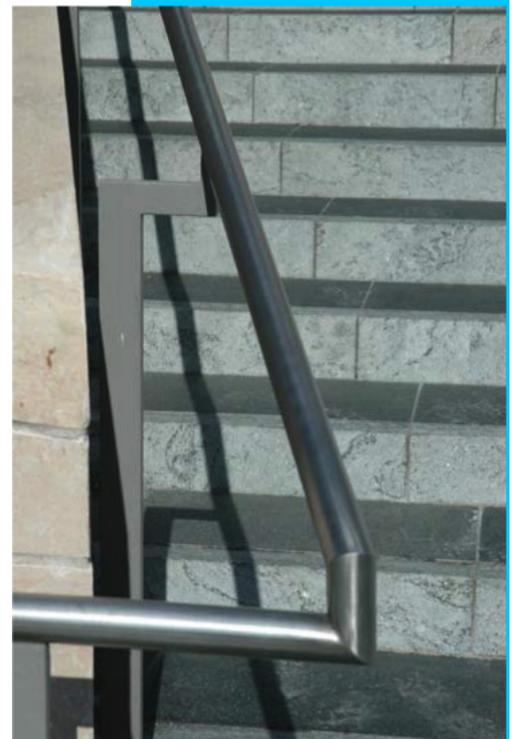
Educator: Introduce the concept that buildings should be designed to fit how people use them. For this lesson, students will focus on how a building they are familiar with fits their needs. For example, this could be their school, their house, their after school care. Guide the students in brainstorming the different activities they do in that building.

Prompts: What do you do in and around the building everyday? Let’s be very specific in our descriptions (for example, sit in chairs, write on the whiteboard, find books on the bookshelf, throw a ball on the yard, eat lunch). When architects design any kind of building, from a house to a concert hall, they have to think about all the different ways people will use the building. They need to make sure that the building is safe and comfortable for the people who will use it.

Student: Brainstorm out loud from personal experience.

Educator: Introduce students to the concept of analyzing the comfort and “usability” of their selected building.

Prompts: One way we can analyze or observe the building around us is to use all of our senses. Let’s review the five senses (touch, taste, sound, sight, smell.) Right now, sitting in your seat, jot down in your notebook what you see, hear, feel and smell. Let’s leave taste out of it for now.



Erin Silva/SAF

Materials:

- paper
- pencils



Student: List five senses and describe senses they feel at the moment.

Educator: Guide students in making connections between the senses and their comfort level.

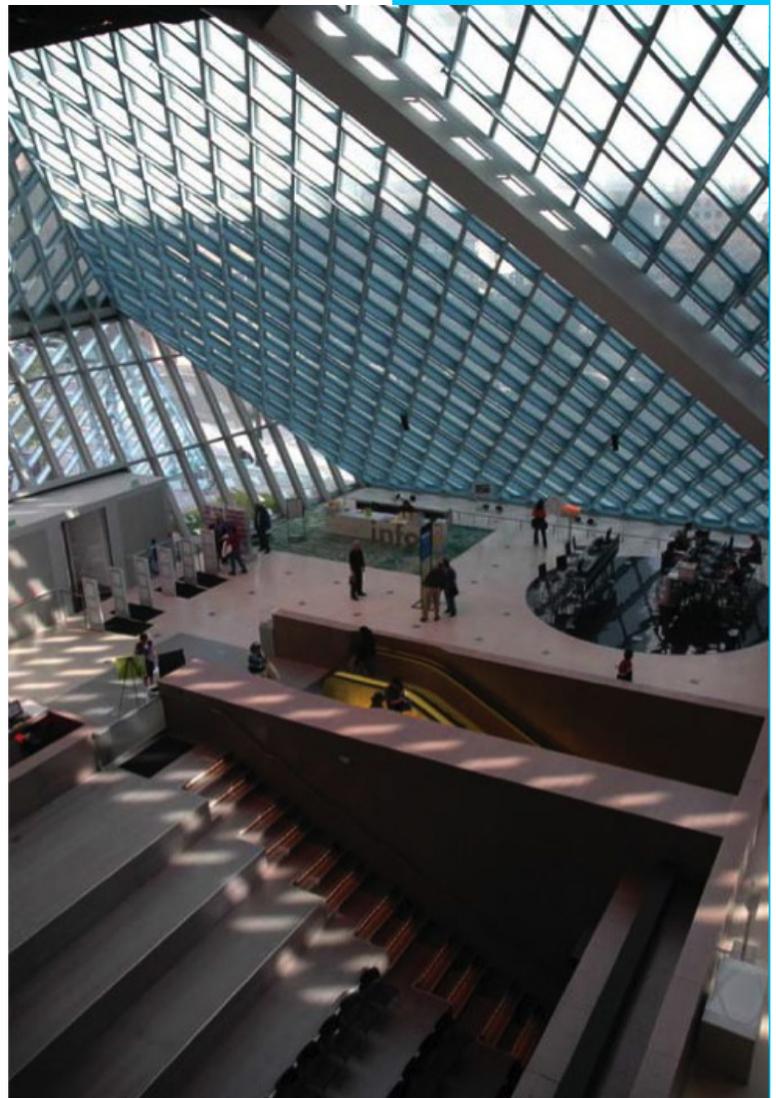
Prompts: When you think about how it feels to sit there, is it comfortable? Do you feel more comfortable standing up or sitting on the floor? Go ahead and do that if you want and think about how that feels different. It is important that we feel comfortable and safe in buildings, but those feeling can be different for different people. Only you can determine how comfortable the building feels for you.

Introduce the concept of scale: the relative size of one thing to another.

Prompts: Another way to think about your comfort level is to consider the scale of the building in relationship to you. Have you ever walked into a building with very high ceilings? How did that make you feel? How do you feel when you go into a very small space, like a closet? Or how does it feel to walk by a building with window at your eye level, as compared to a building with windows up high? How does it feel when you sit very close to someone, or when you sit far away from someone? We all have different comfort levels in terms of how we feel in different spaces.

Student: Discuss what spaces feel comfortable. Use words and movements to describe how they feel in different size spaces.

Educators Notes:
Some examples of different types of buildings with different scales and aesthetics are: libraries, religious buildings, banks, port-a-poties, and grocery stores.



Erin Silva/SAF



Lesson 2: Measuring for Good Design

Educator: Introduce measuring scale relative to students' height. Pass out measuring tapes and ask students to find a partner. Instruct students to measure the partner's height in inches, record it, and give the measurement to their partner so each student knows their height. Explain that height will be one unit of measure. Ask the students to find another object in the room, such as a chair, and to measure its height.

Prompt: How does the height of the chair compare to your height? Is the chair half as tall as you are? Another way to think about it is: how many chairs would you need to stack one on top of the other to be as tall as you? The size of the chair compared to your size is what we call scale. We feel comfortable in a building when its parts are placed at a scale that makes them easy for us to use.

Student: Measure partner's height.

Receive measurement from partner and compare it to the measurement of a classroom object. (Older students can calculate the exact ratio between their height and the object's height. Younger students can estimate the ratio visually.)

Educators Notes:

If you have an odd number of students, step in to be a partner.



Erin Silva/SAF

Materials:

- measuring tape
- paper
- pencils

Lesson 3: Design Treasure Hunt

Educator: Introduce treasure hunt activity. Have students divide into teams if possible; each team selects four or five cards from a bag. On the card is listed an element from the building's interior (or exterior, though a building exterior treasure hunt may need to be a separate activity). Typical elements might be a doorknob, a window sill, a doorway, a wall, a water fountain, a cabinet or a sink.

Hand out the Building for People Treasure Hunt and instruct students to carefully observe, like scientists, the part of the building they selected, using as many of the five senses as practical.

Prompt: Measure the part of the building relative to your size.

You can use a magnifying glass or binoculars to get an even closer look (If applicable).

After the students complete each of these steps have them determine if that part of the building is "usable" for them.

Prompt: If you don't feel comfortable using the part of the building you selected, what would make it feel better? Think about each sense--do you want it to look, smell, sound or feel different (remind students that we are not exploring taste in this activity), or would you change the size or placement?

Student: Divide into teams, select cards and complete activity sheet by using senses and assessing the scale of each item to determine if it is usable.

(Students may need additional chaperones/ supervision if they conduct the treasure hunt throughout the school building or outside.)

Educators Notes:

Another way students can explore building details is by rubbings. Place a clean sheet of paper on a dry, textured surface and use the broad side of a pencil or crayon to capture the detail.



Mary Kae McCullough/SAF

Materials:

- measuring tape
- paper
- pencils
- 3x5 cards
- bag (for cards)
- Building for People Treasure Hunt
- magnifying glass (optional)
- binoculars (optional)

Lesson 4: Designing for Different Abilities

Educator: Ask students to consider what their reaction to the building element they examined earlier would be if one of their senses was impaired (for example, sight, hearing, or ability to move).

Prompts: How comfortable would that part of the building feel if you had a disability? What changes would you recommend to make it more comfortable? What accommodations have already been made in the building for people with disabilities? Can you find wheelchair ramps, elevators, handicapped bathroom stalls, lowered water fountains or anything else?

Gather students back together and ask them to present their ideas about some changes they might recommend to make the building more comfortable for them.

Prompts: If you could make a recommendation to the person in charge about changing parts of the room or building, what would they be? What might the most comfortable room look like? How would it be the best place for you to learn?

Student: Compare responses. Discuss changes they would make to aspects of their school and/or classroom to make it more accessible.

Educators Notes:

This is a great time to discuss where students have noticed design for people with different abilities.



Kim Owerns/SAF

Materials:

- paper
- pencils



Lesson Adaptations:

For students grades 4-8:

Wayfinding, flexibility and personalization: Expand on the idea of ergonomics and also consider the issues of clear wayfinding, flexibility and personalization in a space. These are the characteristics that have been found to make office buildings less stressful. How could they be applied to the school? Consider questions such as:

Wayfinding: Wayfinding are signs, maps, and other graphic or audible methods used to convey location and directions.
Prompts: When you first started school, did you get lost? What could be done to make it easier to find your way around?

Flexibility: Flexibility in buildings means certain spaces can be used for multiple purposes.
Prompts: Would you like some of the spaces in your school to have multiple uses? Would you like to choose, for example, to eat lunch in the cafeteria or in your classroom? Would you like to read books in the library or the playground? Would different environments work better for your learning?

Personalization: Personalization means to make something individual, or customized.
Prompts: People who work in offices tend to feel less stress if they are allowed to personalize their workspaces, for example by bringing in photographs and objects from home. How would you like to personalize your classroom?

For students grades 6-8:

Have students conduct the same sort of treasure hunt by finding particular places in the school, such as the library, restroom, gym, cafeteria, and measuring the distance to each place from their classroom. Students can use measuring tapes, if available, or count the number of paces to each location.

Ask them to note, as they are moving from place to place, their comfort level. Does a certain place feel too far away? Do they encounter steps that feel too steep? Are there places in the building that get crowded at certain times of the day, such as the entrance way at the beginning and at the end of the school day? Have students think of ways to solve these issues having to do with moving around the building, otherwise known as the “circulation corridors.”

Educators Notes:

If you home school, consider asking questions about a building your students are familiar with, such as a grocery store, library, or community center.

Materials:

- measuring tape
- paper
- pencils
- 3x5 cards
- magnifying glass (optional)
- binoculars (optional)



Additional Lesson Options:

- Explore:** Explore how parts of buildings can be redesigned to comply with the Americans with Disabilities Act (ADA). They can try limiting one of their senses, such as sight or hearing, and then considering how the building would need to be redesigned to be more usable for them. Or, contact a local organization, such as the Washington Council of the Blind, to see if someone could visit the classroom and help the students experience navigation in a space with a disability.
- Discuss** Discuss the various ways students like to learn. Do some students need quiet spaces while others like to work in groups? Do some students like to sit down while others prefer to lie down or stand up when they work? How would they reorganize the classroom set-up to best fit their learning style?
- Write:** Have the students write a story describing their sensory experience when entering their home. First brainstorm a list of ways to describe the way things look, feel, touch, smell and taste.
- Model:** Create a scale model of the classroom. Then create model people that can comfortably fit in the room. Next, use the ratio of real classroom size to model classroom size (for example, one foot in the real classroom equals one inch in the model classroom) to determine the size of the person who best fits in the room. Does the room work best for an adult's size or a child's size?
- Survey:** Conduct the Treasure Hunt activity in the neighborhood and in other types of buildings.
- Design:** Be an interior designer. Notice how different parts of your home make you feel. What parts might you change to make you feel more comfortable and how? What parts can't you change? How can you work around that?
- Visit:** Visit some places that are designed specifically for children, such as the Children's Museum or the children's section in your local Library. Or visit places specifically designed for people with disabilities, such as a nursing home or assisted living center.

Helpful Links:

[Americans with Disabilities Act Design Standards](#)

[Washington Council of the Blind \(WCB\)](#)

[Learning Style Guide](#)

[Learning Style Quiz](#)



Vocabulary:

- Accessibility:** To design something easy to approach, reach, enter, or use.
- Comfort:** A state of ease or well-being.
- Design:** To plan out in graphic form.
- Ergonomics:** Design factors intended to minimize worker fatigue and discomfort.
- Exterior:** The outside of a building.
- Interior:** The inside of a building.
- Scale:** The relative measured size relationship of one object to another.
- Senses:** Perception of stimuli outside of the body, such as hearing, sight, smell, touch, taste and equilibrium.
- Usability:** The assessment of fitness for use or convenience.
- Wayfinding:** Signs, maps, and other graphic or audible methods used to convey location and directions.



Image Background Information:

Central Branch of the Seattle Public Library

The downtown branch of the library has an easily navigable set of sloping floors for its nonfiction collection with dramatic views of the city and Elliot Bay. Components of the building include a “book spiral” which is a set of long ramps – each rising six feet as it extends the length of the library. There is also a 15,000 square-foot Children’s Department with sloping exposed concrete columns. Entering from the Fifth Avenue entrance, visitors will walk into the “living room” at the base of the building’s dramatic atrium. An area called the “Mixing Chamber” is where visitors find the reference desk, and Mixing Chamber staff can talk with librarians in the book spiral using wireless devices. The Meeting Floor consists of balconies, where visitors can watch others and scan the floors they want to visit next.

Seattle City Hall

The current City Hall building opened in Seattle in 2003. It was designed to be an important public landmark representing Seattle’s open and accessible government. It replaces the Municipal Building which was not earthquake safe. City Hall now houses the Mayor’s Office, the City Council Offices and Chamber, and key customer services. The building has been designed to be usable by all different types of people. Many accommodations have been made to make the building accessible to the handicapped, with accessible parking spaces, clear and simple wayfinding, adequate seating and security.

To learn more about the architect, Karen Braitmayer, who helped design accessible spaces in the new City Hall, read the [Seattle Post-Intelligencer article](#).

Bellevue’s Inspiration Playground

The City of Bellevue worked with the Bellevue Rotary Club to expand the playground in Bellevue Downtown Park in 2012. The new park opened in 2017 and includes an innovative play space where kids of all ages and abilities can play and explore at their own pace. It provides activities that are fun and challenging, that support the physical, educational and social development of the individual, and that consider sight, sound, scent and touch. It is one of three inclusive playgrounds and parks in the greater Seattle area.

A Tail of Two Rails

Handrails are a common safety and accessibility feature more commercial buildings include along stairs or ramps. They help people keep balance. Rails are also used by skateboarders. To keep rails from being damaged and in good use for people anchors are often placed on rails or benches to protect skateboards from wearing them down.

List of Images:

- Handrails
- Skateboard prevention
- Seattle Central Library: Vertical circulation
- Seattle City Hall: Entry
- Inspirational Playground
- Inaccessibility cartoon



Date: _____

Student Name: _____

Evaluation:

- 1. Well Below Target
- 2. Approaching Target
- 3. Meeting Target
- 4. Exceeding Target

Describe				
Writes down how parts of building look, sound, feel and smell	1	2	3	4
Educator's Comments:				

Analyze				
Measures scale of parts of building relative to own height	1	2	3	4
Educator's Comments:				

Synthesize				
Determines design changes based on sensory experience of the building	1	2	3	4
Educator's Comments:				

Lesson Goals and Outcomes

Goal: Describes the parts of a building using their senses.

Outcome: Writes down how different parts of the building look, sound, feel and smell.

Goal: Analyzes the scale of the building in relation to their own height.

Outcome: Measures elements of the building using their own height as one unit.

Goal: Synthesizes information about the scale of various building elements and uses sensory experience to decide if the design of the building or room best fits their use.

Outcome: Determines and recommends design changes to the building or room to better accommodate their use of it.

BUILDING FOR PEOPLE TREASURE HUNT ACTIVITY

1. Use 1-3 words to describe what your senses tell you about the each part of the building.
2. Measure the object using a ruler. In the “scale” column, ask yourself how many of you would it take to be a similar height to each object. **Example:** Me = 42 inches. Wall light switch = 48 inches = 1 Me
3. Explain why the object IS or IS NOT comfortable to use, and what you would change to make it more comfortable.

INTERIOR

	Sight I see...	Sound I hear...	Touch I feel...	Smell I smell...	Scale Me = _____ inches	Is this object comfortable to use?
Doorknob					_____ inches = _____ Me	Circle: YES NO Because: I would change:
Sink					_____ inches = _____ Me	Circle: YES NO Because: I would change:
Window Sill					_____ inches = _____ Me	Circle: YES NO Because: I would change:

BUILDING FOR PEOPLE TREASURE HUNT ACTIVITY - (continued)

1. Use 1-3 words to describe what your senses tell you about the each part of the building.
2. Measure the object using a ruler. In the “scale” column, ask yourself how many of you would it take to be a similar height to each object. **Example:** Me = 42 inches. Wall light switch = 48 inches = 1 Me
3. Explain why the object IS or IS NOT comfortable to use, and what you would change to make it more comfortable.

INTERIOR

	Sight I see...	Sound I hear...	Touch I feel...	Smell I smell...	Scale Me = _____ inches	Is this object comfortable to use?
Doorway					_____ inches = _____ Me	Circle: YES NO Because: I would change:
Wall					_____ inches = _____ Me	Circle: YES NO Because: I would change:
Stairway					_____ inches = _____ Me	Circle: YES NO Because: I would change:

BUILDING FOR PEOPLE TREASURE HUNT ACTIVITY

1. Use 1-3 words to describe what your senses tell you about the each part of the building.
2. In the “ Scale ” column, either shade or mark where the object comes up to you on the cartoon character.
3. If the object is larger than you, estimate how many of you it would take to equal the height of the object.
4. In the last column circle YES or NO, and write down what you would change to make the object more comfortable to use.

EXTERIOR

	I see...	I hear...	I feel...	I smell...	Scale	Is this object comfortable to use?
Doorknob					 _____ Me = Doorknob height	Circle: YES NO I would change:
Sink					 _____ Me = Sink height	Circle: YES NO I would change:
Window Sill					 _____ Me = Window sill height	Circle: YES NO I would change:

BUILDING FOR PEOPLE TREASURE HUNT ACTIVITY - (continued)

1. Use 1-3 words to describe what your senses tell you about the each part of the building.
2. In the “ Scale ” column, either shade or mark where the object comes up to you on the cartoon character.
3. If the object is larger than you, estimate how many of you it would take to equal the height of the object.
4. In the last column circle YES or NO, and write down what you would change to make the object more comfortable to use.

EXTERIOR

	I see...	I hear...	I feel...	I smell...	Scale	Is this object comfortable to use?
Doorway					 _____ Me = Doorway height	Circle: YES NO I would change:
Wall					 _____ Me = Wall height	Circle: YES NO I would change:
Stairway					 _____ Me = Stairway height	Circle: YES NO I would change: