

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 & Assessment Criteria:

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

Criteria: Students write down how different parts of their school look, feel, smell and sound.

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

Criteria: Students measure elements of the school using their own height as one unit.

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

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

Integrated Subjects:

Math
Science
Health

Suggested Grade Levels:

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

Essential Academic Learning Requirements (EALRS):

Health Fitness 3.1
Health Fitness 3.2
Science 2.2
Math 1.2

Lesson Duration:

Up to four one-hour class periods

MATERIALS:

- measuring tape
- paper
- pencils
- magnifying glasses
- 3x5 cards
- bag (for cards)
- *Building for People Treasure Hunt: worksheet*
- *Check Your Work for Students worksheet*

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 (the 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?

Day One –Design for Peoples’ Needs and Comfort

Teacher: Introduces the lesson concept that buildings should be designed to fit how people use them. For this lesson, students will focus on how their school building fits their needs. Guides the students in brainstorming the different activities they do in the school building.

Prompts: *What do you do in and around the school everyday? Let’s be very specific in our descriptions (for example, sit in chairs, write on the board, find books on the bookshelf, throw a ball on the playground, take a drink from the water fountain, get lunch in the cafeteria.) When the 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.*

Students: Brainstorm from personal experience.

Teacher: Introduces students to the concept of analyzing the comfort and “usability” of their school.

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.*

TEACHER NOTES:

Erin Silva/SAF

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

Teacher: Guides students in making connections between the senses and their comfort level.

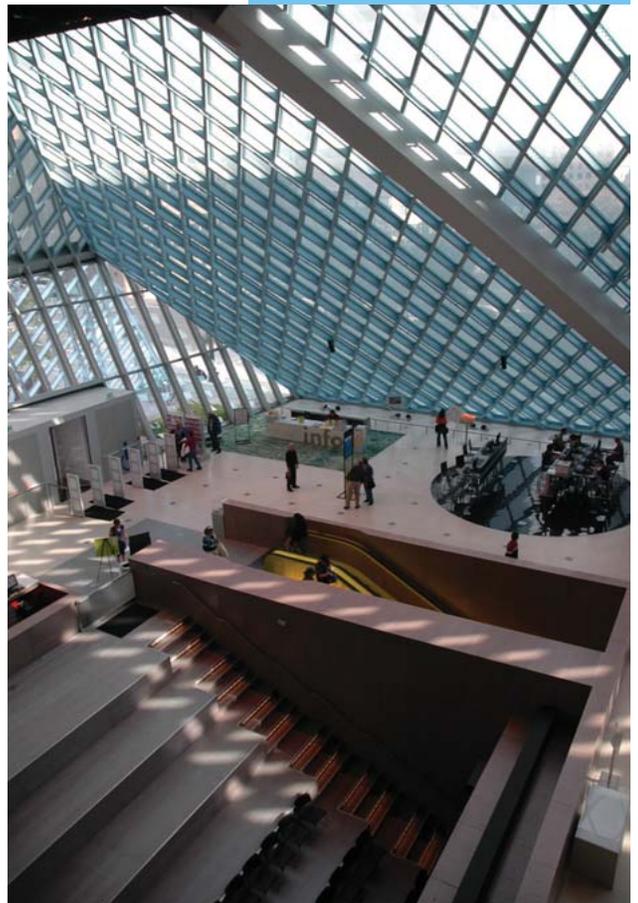
Prompts: *When you think about how it feels to sit there, is it comfortable? Do you feel more comfortable standing up or sitting on the floor? Go ahead and do that if you want and think about how that feels different. It is important that we feel comfortable and safe in buildings, but those feeling can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

Introduces 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? You can get up and show me with your body how you feel. 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.*

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

TEACHER NOTES:



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Day Two – Measuring for Good Design

Teacher: Introduces measuring scale relative to students' height. Passes out measuring tapes and asks students to find a partner. Instructs students to measure the partner's height in inches, record it, and give the measurement to their partner so each student knows his or her height. Explains that height will be one unit of measure. Asks the students to find another object in the room such as a chair, desk, book, etc., 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 (or other object) 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.*

Students: 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.)



Mary Kae McCullough/SAF

TEACHER NOTES:

Day Three – Design Treasure Hunt

Teacher: Introduces treasure hunt activity. Have students divide into teams; 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.

Hands out the treasure hunt activity sheet (see Building for People Treasure Hunt worksheet) and instructs students to carefully observe, like scientists, the part of the building they selected, using as many of the five senses as is practical.

Prompt: *You can use a magnifying glass to get an even closer look. Then, measure the part of the building relative to your size.*

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?*

Students: 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.)



Erin Silva/SAF

TEACHER NOTES:

Day Four – Designing for Different Abilities

Teacher: Asks students to consider what their reaction to the building element 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?*

Teacher: Gathers students back together and asks 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 principal about changing parts of the classroom or school, what would they be? What might the most comfortable classroom for you look like? How would it be the best place for you to learn?*

Students: Compare responses. Discuss changes they would make to aspects of their school and/or classroom.



Source: www.wheelchairmet.org

TEACHER NOTES:

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 - When you first came to this school, did you get lost? What could be done to make it easier to find your way around?

Flexibility – 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 – 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:

Review a floor plan of the school building. Have students conduct the same sort of treasure hunt by finding particular places in the building, 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.”

TEACHER NOTES:

TEACHER NOTES:**SHAPING YOUR COMMUNITY:**

Notice how different parts of your home make you feel. What parts might you change to make them feel more comfortable? What parts can't you change? Where are good resources for "child-friendly design"? Visit some places that are designed specifically for children, such as the Children's Museum or the children's section in the new Central Library. Or visit places specifically designed for people with disabilities, such as a nursing home or assisted living center.

ADDITIONAL LESSON OPTIONS:

- 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 Lighthouse for the Blind, to see if someone could visit the classroom and help the students experience navigation in a space with a disability.
- 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?
- 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.
- Create a scale model of the classroom. Then use modeling clay to 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?
- Conduct the Treasure Hunt activity in the neighborhood and in other types of buildings.

BACKGROUND INFORMATION:**Central Branch of the Seattle Public Library**

The new downtown branch of the library, opened May 2004, is 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

A new City Hall 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. The site of the Municipal Building will become a landscaped Civic Plaza. 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 online at:

http://seattlepi.nwsourc.com/visualart/163492_architecture08.html?searchpagefrom=2andsearchdiff=351

List of Images:

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

Images for each unit can be found on the SAF website @ www.seattlearchitecture.org

Related Lesson Plan

Architecture and Senses. Sixth Grade Language Arts Lesson, Schoolyards to Skylines: Teaching with Chicago’s Amazing Architecture. Chicago Architecture Foundation, 2002

Website:

Americans with Disabilities Act:
<http://www.usdoj.gov/crt/ada/adahom1.htm>

VOCABULARY:

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.



Date: _____

Student Name: _____

- 1 - Well below target
- 2 - Approaching target
- 3 - Meeting Target
- 4 - Exceeding Target

Teachers: Indicate assessment in each target area by circling the number that best describes student's participation.

Lesson Goals & Assessment Criteria

Describe				
Writes down how parts of building look, sound, feel and smell	1	2	3	4
TEACHER'S COMMENTS:				

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

Criteria: Writes down how different parts of their school look, sound, feel and smell.

Analyze				
Measures scale of parts of building relative to own height	1	2	3	4
TEACHER'S COMMENTS:				

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

Criteria: Measures elements of the school using their own height as one unit.

Synthesize				
Determines design changes based on sensory experience of the building	1	2	3	4
TEACHER'S COMMENTS:				

Target: Synthesizes information about the scale of various building elements and uses sensory experience to decide if the design of the school best fits their use of it.

Criteria: Determines and recommends design changes to the school building to better accommodate their use of the building.

CHECK YOUR WORK!

Student Name: _____ Date: _____

Give yourself a check, if you completed the tasks below to the best of your ability.

Did I?



Write down how parts of the building look, feel, smell and sound?	
Measure the scale of the various parts of the building relative to my own height?	
Determine any design changes based on what I saw, heard, smelled and felt?	

These tasks were the most challenging for me:



Writing down how parts of the building look, feel, smell and sound.	
Measuring the scale of the parts of the building relative to my own height.	
Determining any design changes based on what I saw, heard, smelled and felt.	

These tasks were easy for me:



Writing down how parts of the building look, feel, smell and sound.	
Measuring the scale of the parts of the building relative to my own height.	
Determining any design changes based on what I saw, heard, smelled and felt.	

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 = _____ Me	Is this object comfortable to use? Circle: YES NO Because: I would change:
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.

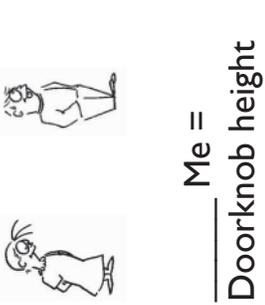
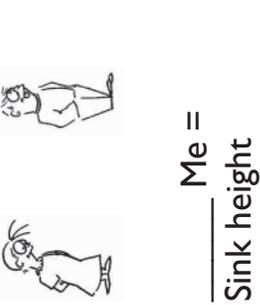
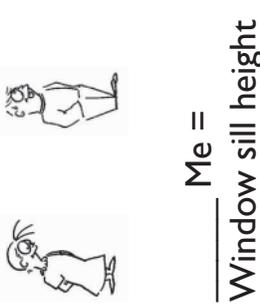
EXTERIOR

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

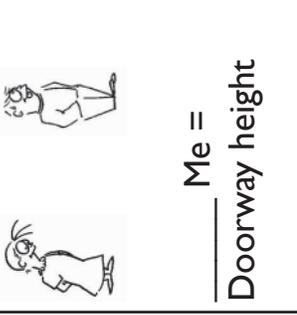
INTERIOR

	I see...	I hear...	I feel...	I smell...	Scale	Is this object comfortable to use? Circle: YES NO I would change:
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: