WEEK 4: SUSTAINABILITY

How can the built environment help the natural environment?
What Is SUSTAINABILITY?

Write on the board what you think of when you think of the word “Sustainability”

Did your classmates write anything you hadn’t thought of?
Two Aspects of Sustainability

**SUSTAINABLE ACTION**

- You know these!
  - Recycle your used materials
  - Use reusable bags, bottles, etc.
  - Turn electronics and lights off when you are not using them
  - Don’t buy things that you do not need

**SUSTAINABLE DESIGN**

- Do you know about these yet?
  - Creating products/structures that have the least negative impact on the health of people, the economy of an area, and the environment
  - Meeting the needs of the present generation without depleting the ability of future generations to meet their own needs
Sustainable Design (Green Design)

- Introduction to sustainable design:
  - [https://www.youtube.com/watch?v=MyIOtsx3wDs](https://www.youtube.com/watch?v=MyIOtsx3wDs)

Now that you have a broad understanding of what sustainable design is, let’s look at sustainable building practices and how we can help to green our food spaces!
What Makes a Space Sustainable?

- Location & Transportation
- Sustainable Site
- Water Efficiency
- Energy Efficiency
- Materials
- Resources
- Indoor Air Quality

There is more to it, but these are a great start!
LOCATIONS & TRANSPORTATION

Is it in an area where you can walk to many of the places that you need to go?

Is there public transportation available nearby?

Does your structure encourage alternative transportation by providing bike racks?
SUSTAINABLE SITE

Adaptive Reuse in Denver

- Does your site already exist? This means not destroying any natural land to build.

- Does your site help manage rainwater? This can be achieved with pervious pavement, rain gardens, and green roofs, along with other strategies.
WATER EFFICIENCY
GE Targets Net Zero Energy Homes by 2015

**Home Energy Manager**
The central nervous system for the net zero energy home helps homeowners optimize energy consumption.

**Solar Photovoltaic**
3 kW to 4 kW solar array on the roof to meet energy requirements of the home.

**Small Wind**
Supplementary renewable generation.

**Smart Meter**
A communication gateway between the Smart Grid and the home.

**Geothermal Heat Pumps**
Reduces HVAC and water heating energy requirements by 30%.

**GE Heat Pump Water Heater**
Uses less than half the energy of a conventional electric water heater.

**Energy Efficient Lighting**
High efficiency CFL, LED, and OLED lighting.

**Demand Response Appliances**
High efficiency Energy Star Appliances shed load from the grid and help consumers save money during peak demand.

**Energy Storage**
Battery storage for backup power and peak loads.

**GE Water Filtration**
Filters, conditions and monitors home water usage.
Recycled & renewable materials are the best option. They divert waste from landfills and encourage the use of renewable resources.
How much waste is your space creating? How are you working to minimize it?

Are you participating in a recycling program?

Are you utilizing composting?

What other creative ways can help minimize the amount of waste that leaves your space?

Compost Bins
INDOOR AIR QUALITY

The Good and Bad of Indoor Air Quality
Sustainable Play Spaces

- Lion’s Park in Alabama
- University students used 2000 recycled steel drums that had been donated to creative this play space
Sustainable Play Spaces

- Wikado Playground in The Netherlands
- Old windmills and modern wind turbines were creatively reused to create this maze-like play structure
Sustainable Play Spaces

- Rubber Tree Playground in Thailand

- This play space is made entirely of discarded tires and held together with a bamboo frame

- The play space was created for refugee children on the border of Thailand and Myanmar
Sustainable Play Spaces

- The Geopark in Norway
- This play was built in the base of Norway’s oil industry and took advantage of discarded components of oil rigs
Sustainable Play Spaces

- Carlos Teixeira’s ‘The Other, The Same’ installation in Brazil
- The labyrinth in this photo was created with recycled cardboard
Sustainable Play Spaces

- Tempelhofer Feld in Berlin, Germany

- This giant park was created on the reclaimed site of their old airport, so you can bike, walk, or windsurf on the old runways

This would be an awesome activity to do if you have the time for it. The University of Illinois created a LEED Certification System for a Lego Home and it will really enforce how that system works and what specific things make a building/site sustainable.