Integrating Sustainability Principles in the Design Classroom: Art History/LEED

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San José State University
Campus as a Living Lab: Linking South San Francisco Bay Campus as Living Labs in a Learning Community

SJSU: Sustainable Agriculture Garden
      Cogeneration Plant
      MLK Library, a LEED building

De Anza: Kirsch Center
       Campus Food System
       Cheeseman Ecological Area

Foothill College: Composting Site
                 Phenology Lab
                 Waterwise Plant Lab
LEED: Leadership in Energy & Environmental Design

U.S. Green Building Council

• LEED Certification for Projects:
  – Building Design & Construction
  – Interior Design & Construction
  – Building Operations & Maintenance
  – Neighborhood Development
  – Homes

• Certification Levels: Certified, Silver, Gold, Platinum
King Library LEED certification

- 2003: Built to New Construction, Silver standards
- 2011: Existing Building: Operations & Maintenance, Silver certification
Building Operations & Maintenance: LEED Credits / Group Assignments

Location & transportation
Sustainable sites
Water efficiency
Energy & atmosphere
Material & resources
Indoor environmental quality
Innovation
Time use on an average weekday for full-time university and college students

- Educational activities (3.3 hours)
- Leisure and sports (4.1 hours)
- Other (2.3 hours)
- Total = 24.0 hours

NOTE: Data include individuals, ages 15 to 49, who were enrolled full time at a university or college. Data include non-holiday weekdays and are averages for 2010-14.

Module Goals

Students will be able to:

1. Name the 3 E’s to demonstrate understanding of sustainability: environment, equity, economics

2. Name LEED credits to demonstrate awareness of sustainable building features.

3. Self reflect if awareness of sustainability and LEED credits changed personal choices.
Librarian Guest Lecture:
3 E’s & LEED Credits

King Library LEED certification: Transportation & Location

This research guide describes the green features of the Dr. Martin Luther King Jr. Library, as defined by the LEED certification for the Operations & Maintenance for existing buildings, and focuses on the interconnections of buildings, community and self.

3 E’s of Sustainability | LEED Certification | Transportation & Location | Sustainable Sites | Water Efficiency | Energy & Atmosphere
--- | --- | --- | --- | --- | ---
Materials & Resources | Indoor Environmental Quality | Innovation | Other SJSU Leed Buildings | The Green Ninja & more ...

Transportation & Location category
- Transportation & Location credits
- Transportation & Location overview

History of the SJSU University Library
- The University Library in the Days of the Normal School, 1862-1923
- The Journey of Wahlinquist and Clark, 1923-1982
- The SJSU Library Moves Into the Digital Age, 1980-today

San Jose Public Library History
- Historical Timeline of San Jose Public Library
- San Jose Public Library History and Facts

Getting to the King Library
Stand at the corner of 4th and San Fernando Streets. How do people get to the library?

1. Make a list of all the ways that people get to the library. Are any of the modes free? What expenses does getting to the library involve?
2. If people take public transit, what type of public transit do they use? What are the routes that come to the library?
3. If people drive, where do they park? How much does it cost them to park?

The Dr. Martin Luther King Jr. Library, a joint library
Goals for ARTH 72 *Design in Society*

Present a Design topic with “hands-on” approach (offering contrast from theoretical textbook examples)

Opportunity to engage students in a project-based assignment requiring collaborative methods

Enrolled students in Fall 2015 at King Library, San José State University
<table>
<thead>
<tr>
<th>Category</th>
<th>Certified</th>
<th>Silver</th>
<th>Gold</th>
<th>Platinum</th>
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<tr>
<td>Transportation &amp; Location</td>
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<tr>
<td>Sustainable Sites</td>
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<tr>
<td>Water Efficiency</td>
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<tr>
<td>Energy &amp; Atmosphere</td>
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<tr>
<td>Materials &amp; Resources</td>
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<tr>
<td>IEQ</td>
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<tr>
<td>Innovations</td>
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</table>
ARTH 72 Project-Based, Group Sustainability Assignment requires students to investigate the LEED features and technologies of the King Library through design.
Energy and Atmosphere

From L-R
Basket troffers Before and After
Parabolic Troffers Before and After
Occupancy Sensors

- Design choices that help eliminate carbon emission and global warming.
- Reduce operating cost
- Improve life-cycle cost
- Increases user comfort with natural light
Energy and Atmosphere

Climate, atmosphere, light, electricity...

LEED Certified
Silver rank, April 2012

Stegall
Designer and user responsibilities

DeKay
Beauty in eco-efficiency
Transportation & Location

VTA Services
- Buses
- Light rail
- Dash

Bay Area Bike Share
Transportation & Location
Accessibility, King Library Interior

Stairs

Escalator

Elevator
Water Efficiency

MLK Library features:
Gravel French Drain system and Trench Drain System, no ground water drainage systems

In 2013, we received 7 inches of rain, and in 2014 only 12. California has been warm as well as dry. A large percentage of California is in “exceptional” drought.
Sustainable Sites

Merger of old San Jose public library to become the Dr. Martin Luther King Jr. Library on the San José State University campus, San Jose, CA
Indoor Environmental Quality: Atrium

Atrium: a large open space located within the building.
MLK Atrium: 7 stories high atrium with having glass window and ceiling natural lighting and ventilation.

Marina Menendez-Pidal
Amanda Fletcher
Sean Tarrice
Diana Rojas
Jasmeet Singh
Harold Washington
IEQ: Natural Lighting

Large windows and skylights connect library patrons to the surrounding community.

The bright and spacious environment suggests openness and unity.

Improves well-being
IEQ: Benefits

Health

Lower depression levels

Better sleep

Decreased eye strain

For Students  Increased

productivity  Higher test scores
Materials and Resources

Vincent Brubaker-Gianakos; Chi Ho, Ko; Tim Haake; Alex Leporace; Guillermo Cabrera; Vinh Le

The library uses nontoxic cleaning materials, products and reusable cloth towels.

Chairs are reupholstered for reuse.

Unwanted furniture is matched with departments or people who need.

Made available to other departments.

Donated to non-profit agencies/schools.

Sent to public auction.
Materials and Resources: Tables

East Side Story
Made from recycled materials in good condition

Inspired by and connected to the local community

Its table top features photographs of East San Jose and people from this area.

Montanna Davis, Riho Ishihara, Kristina Newton, Jessica Panian, Aurea Rodriguez, and Kristian Stewart
Design shapes experience:

Water Erosion Sinks: Hai Ho, Zarin Khan, Isaac Tovar, Andre Ho, Nico Reis, Daniel Howard, Chunhui Gu

➢ primary group: SJSU students & downtown SJ community

➢ one sink in every restroom resembles water erosion process

➢ narrative created by these sinks shapes the user’s experience DeKay

➢ makes the users aware of their role in the ecosystem while washing their hands, their behavior encourages more mindful water use and better efforts at water conservation
Methods Employed: “Ecologically Intentional Design,” (Nathan Stegall) applied to Water Efficiency

The sustainable axe vs. the chopped down forest. The Library is sustainable but the user must truly comprehend what he/she is interacting with, or the design’s purpose is not met.

- Eroded Sinks by Mel Chin
- Signage
- Website
- Sustainability in courses
Examples of Water Erosion designed by Mel Chin at SJSU King Library

“Every artifact makes an argument.”

- Ecological Design’s Philosophy of Purpose (Stegall).

Ruchi Gaur, Ben Ho, Nichole Ando, Aliyah Edmonds, Zach Evans

TO CONSERVE WATER, THIS BUILDING USES RECLAIMED WATER TO FLUSH TOILETS AND URINALS.
Survey Questions Types

- Sustainability & LEED credits (2)
- Sustainability choices & self-perception (2)
- Design Theory (2)
The Brundtland Commission of the United Nations defined Sustainability by the 3 E’s. List what you think are the 3 E’s.

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<th>Category</th>
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<td>Eco-Ecology</td>
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<tr>
<td>Efficiency</td>
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<tr>
<td>Energy</td>
<td>28</td>
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<tr>
<td>Equity/Equality</td>
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<tr>
<td>Miscellaneous</td>
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LEED certification is based on seven major categories. What categories would you create to rate a building on its sustainability?

<table>
<thead>
<tr>
<th>Category</th>
<th>Score (Out of 100)</th>
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<td>Transportation &amp; Location</td>
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<td>Materials &amp; Resources</td>
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<td>Indoor Environmental Quality</td>
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<td>Innovation</td>
<td>15 (3)</td>
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<td>Miscellaneous</td>
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Current Sustainable Practices:
What do you do in your personal life to live more sustainably?

<table>
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<tr>
<th>Activity</th>
<th>Count</th>
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<tbody>
<tr>
<td>Wise Water Use</td>
<td>53</td>
</tr>
<tr>
<td>Turn Off Lights/Electronics</td>
<td>64</td>
</tr>
<tr>
<td>Sort Waste</td>
<td>51</td>
</tr>
<tr>
<td>Commute</td>
<td>14</td>
</tr>
<tr>
<td>Buy local</td>
<td>13</td>
</tr>
<tr>
<td>Reuse/recycle products</td>
<td>30</td>
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</table>
| Other: 3                                      |       | Bikes, buys eco-products
Sustainable Choices Self-Rating:
On a scale of 1-5 (1=lowest, 5=highest) how sustainable are the choices you make in your life?

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<td>24</td>
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Survey Responses

- **Energy** (most common answer: Passive Solar Design)
- **General** (Makes students feel at home; remind the user of waste; could preserve the building while tending to the community; create Design that doesn't feel stuffy)
- **Recycling**
Design Features that communicate sustainability

- Economic
- Benefits the Environment
- Connects to Nature/Sustainability
- Other (easier to use; enjoy; pleasing; can be done with art)
Next Steps

• Revise survey questions to improve student understanding

• Include question on efficacy of hands-on self-tour

• Get IRB approval for a pre- and a post-survey

• Review pre-survey data before instruction to focus on student information needs
Recommended Readings


Recommended Readings (continued)


Photo Credits


