Holistic Sustainability in the Learning Environment
Closing the Equity Gap and Achieving Best Value

ELAC East Los Angeles College, Monterey Park, CA
Agenda

ELAC – Who Are We

Integrated Design Process

Sustainable Strategies

Language Arts + Humanities Outcomes

Q+A
Aris Hovasapian
Utility Program Manager,
Los Angeles Community College District

James Matson, AIA
Vice President, Principal,
HGA Architects and Engineers
WHO ARE WE
Los Angeles Community College District

• Largest community college district in US
• Nine campuses serving 250,000 students
• Nearly three times the Latino student population of all the UCs
• 80% of students from underserved populations
• ½ students over 25 – Lifelong Learning
Mission / Vision

LACCD VISION

Become a national leader in student success with educational opportunities that change student’s lives, enrich the area’s many diverse cultures and strengthen the regional economy.

ELAC MISSION

To assist traditionally underrepresented or struggling students by closing achievement gaps and accelerating student success.
LACCD Sustainable Design Program

BuildLACCD – Sustainability
- Over $6 billion, one of the nation’s largest sustainable building programs

Sustainability Policy Adopted in 2002
- Requirements:
  - LEED Buildings – 45 Certified + 25 Pending
  - 10% Renewable Energy
  - ELAC Solar PV Generated 1.3m kWh in last 12 months = 200 Cars

BuildLACCD – Sustainable Standards
- Design guidelines (furniture, carpet)
- Cradle-to-cradle products
- Water efficiency
- Building site management (orientation)
- Energy plan
ELAC Campus

East Los Angeles College, Monterey Park, CA
INTEGRATED DESIGN PROCESS
Visioning/ Goals
Guiding Principles

Learning & Interaction
- Interdisciplinary collaboration and interaction
- Interaction between professors and students
- Flexibility (allow for reconfiguration, future growth)

Culture
- Hands-on learning and interaction
- Building as a connection hub
- Maximize student access
- Promote business collaboration
- Welcoming – encourage community involvement

Sustainability
- Intuitive learning
- Harness natural features of building site
- Building to be an active learning opportunity – sustainability on display
- Give back to environment

Building Design
- Program for open work areas, success labs, support spaces, classrooms and meeting rooms
- State of the art learning environments
- Transformable in the future
- Maximizing shared spaces while maintaining safety
- Visual connections to project activity areas for facilitate display of student work

Future Planning
- Interdisciplinary learning
- Accommodate business partnerships
- Plan for anticipated enrollment trends

Integration & Technology
- Enable technology to enhance the ways to connect
- Recognize how pedagogy can evolve through new technologies
- Technology to be value-added
Criteria for Success

**Human Experience**
- Spatial Quality
- Comfort & Control
- Daylight & Views
- Noise Control
- Informal Learning
- Natural Ventilation

**Cost**
- First Cost
- Life Cycle Cost
- Ease of Maintenance
- Operations

**Aesthetics**
- Representative/ Image
- Outdoor Connectivity
- Timeless
- Campus Context
- Iconic/ Signature Building

**Environmental**
- Energy Reduction
- Carbon Reduction
- Water Conservation
- Waste Reduction
- Water/ Waste Recycling
- Reclamation/ Generation

- Enhance "Learn by Doing"
- Identity/ Landmark
- Learning Tool
- Adaptability
- Programmatic Flexibility
- Safety/ Security

**Overall**
# Evaluation Matrix

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>ID</th>
<th>Description</th>
<th>Recommended NOW</th>
<th>Recommended FUTURE</th>
</tr>
</thead>
</table>

## OVERALL
- Enhance “Learn by Doing" Identity/Landmark Learning Tool Adaptability Programmability Flexibility Safety/Security
- Spatial Quality Comfort & Control Daylight & Views Noise Control Informal Learning Natural Ventilation

## HUMAN EXPERIENCE
- Representative Image Outdoor Connectivity Timeless Campus Context Iconic Signature Building
- First Cost Life Cycle Cost Ease of Maintenance Operations

## AESTHETICS

### STUDY-1
- **SET A**
  - Layout/Investigation: Needs Investigation
  - Results: 133

### STUDY-2
- **SET B**
  - Layout/Investigation: Needs Investigation
  - Results: 207

### STUDY-3
- **SET C**
  - Layout/Investigation: Needs Investigation
  - Results: 139

Weighting:

<table>
<thead>
<tr>
<th>Overall</th>
<th>Human Experience</th>
<th>Aesthetics</th>
<th>Cost</th>
<th>Environmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>8</td>
<td>8</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>10</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>10</td>
<td>8</td>
<td>8</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>7</td>
</tr>
</tbody>
</table>
SUSTAINABLE STRATEGIES
Holistic Sustainability

Shaping the Future

Human Experience
- satisfaction
- well-being
- performance

Best Value
- do more
- use less
- build less
- life-cycle value

Target Performance
- Five-Zero℠ Plan
  - energy
  - carbon
  - water
  - waste
  - materials
Target Setting

Energy
- Today: Low EUI
- Future: Makes More
- Building: Onsite Renewable
- Community: Than Used

Carbon
- Avoided Carbon: Cleans the Air

Water
- Reduce Use Water cycle: Renews Water Resources

Waste
- Construction: Resources
- Waste Diversion: not Waste

Materials
- Mimic Nature Low Impact: Eliminates Toxins

Reduce Use
Renews Water Resources
Waste Diversion
not Waste
Mimic Nature
Eliminates Toxins
Low Impact

Today
Future
Low EUI
Onsite Renewable
Makes More
Than Used
Avoided Carbon
Cleans the Air
Reduce Use Water cycle
Renews Water Resources
Construction Resources
not Waste
Mimic Nature
Eliminates Toxins
Low Impact
Path to Net Zero Energy

Reduce
- Baseline
- Natural Ventilation
- High Performance Glazing
- High Efficiency Equipment
- High Performance Envelope
- Thermal Massing
- Daylighting and Controls
- Efficient lighting & controls
- Shading & Passive Solar Heating
- Bldg Ops/Plug Load Reduction

Reclaim
- Energy Recovery

Generate
- BIPV
- Site PV
- Wind
- Fuel Cell
- Other Generation

Consumption

Passive

Active

Production
Strategies
LANGUAGE ARTS + HUMANITIES
OUTCOMES
Innovative Learning Environments

Active Learning
Success Centers
Collaboration Spaces
Learning Everywhere
Learning Experience

- Interactive student learning with Instructor as coach
- Improved problem solving
- Increased conceptual understanding
- Improved attitudes
- Increased success rate - failure rates drastically reduced

NCSU data compares nearly 16,000 traditional and SCALE-UP students
http://www.ncsu.edu/per/scaleup.html
Active Learning
Success Centers

English / Reading / Writing
Learning Assistance
ESL / Foreign Language
Collaboration Spaces
Sustainable Strategies
Outcomes

Energy: 30% +/- less than ASHRAE baseline

Carbon: 200 tons +/- avoided annually

Water: 52% +/- less building water, 65% +/- less landscape water

Waste: 95% +/- waste diversion during construction

Materials: >20% +/- recycled content, >20% +/- local supply

Human Experience: Satisfaction Goal 80% using UC Berkeley CBE POE Survey

Value: LCA 20 year savings
  • 51% +/- Energy
  • 28% +/- Exterior Materials
  • 41% +/- interior Materials