TEDxCEFPI

stories of

Leadership | Creativity | Passion
inter+act: leadership from the practical to the poetic
DON PENDER, AIA, LEED BD+C

challenge convention: a journey to cultivate your creativity
WENDY ROGERS, AIA, LEED BD+C

prove it: bringing passion to the classroom
ERIK RING, PE, LEED BD+C
inter+act: leadership from the practical to the poetic
DON PENDER, AIA, LEED BD+C
The Practical and the Poetic

Leadership | Creativity | Passion
“two roads diverged in a yellow wood, and sorry I could not travel both and be one traveler, long I stood and looked down one as far as I could to where it bent in the undergrowth...”
“I admire poets. what they express with a couple of words, requires us a ton of brick.”

- joao batista vilanova artigas
the practical OR the poetic?
aspirational design

- 21st century learning environments
- Sustainability
- Safe and healthy
- Constructability, maintainability
- Program constraints
- “On time, on budget”
- “Get roofs over kids’ heads”
“more perhaps than the product of any other discipline – any of the arts, science, or technology – the artifacts which result from the act of building bespeak the character and aspirations of their makers.”

- Lawrence Speck

*technology, sustainability & cultural identity*
the practical shapes the poetic.
power to shape the outcome
cost to change the outcome
power to shape the outcome

cost to change the outcome
district culture

- 81,000 students
- 3rd largest district in California
- High attendance/low absenteeism
- Broad prize for urban education
- Global education study: recognized as one of the world’s 5 highest performing school districts

“a cultural expectation of value”
ideation to realization

- district wide master planning
- mcbride curriculum planning
- mcbride design
- mcbride construction
engagement:

- bill dejong and his team
- master architect
- survey architects
- engineering disciplines
- community advisory committee
- 7 district planning area committees
- input from thousands of stakeholders
key high school goals:

1. learning environments to support the next generation of students
2. develop small thematic high schools to reduce overcrowding
curriculum planning

- Curriculum leaders
- Key principals
- Architect / facilitator
- Industry partners
- Key teachers
- College leadership
program goals:

1. 4 career pathways
2. distinct small learning communities
3. inspire student aspiration
4. sustainable focus
5. authentic, integrated design
integrated team:

- district
- community
- integrated architects and engineers
- builders
collegiate aspirations

learning happens everywhere
the value of our work, the value of learning
we are better together

collaborative and individual learning
sustainability

responsible design
community aspirations

engagement from inception to occupancy
“I shall be telling this with a sigh somewhere ages and ages hence: two roads diverged in a wood, and I—I took the one less traveled by, and that has made all the difference.”
challenge convention: a journey to cultivate your creativity
WENDY ROGERS, AIA, LEED BD+C
TEDxCEFPI

stories of

Leadership | Creativity | Passion
Where We Learn Matters
25% of the population goes to school every day.

There are 133,000 K-12 schools and 4,300 colleges and universities.
POTENTIAL BENEFACTORS of GREEN SCHOOLS

STUDENTS  FACULTY  TAXPAYERS
how can you make a difference?
1. economical in use or expenditure; prudently saving or sparing; not wasteful.
2. entailing little expense; requiring few resources; meager, scanty.

frugal
green school

\grEn skÜl \n.

a school that creates a healthy environment that is conducive to learning while saving energy, resources and money
LEARN • ING

[lur-ning] -n.
1. knowledge acquired by systematic study
2. the act or process of acquiring knowledge or skill
3. psychology – the modification of behavior through practice, training, or experience

STU • DI • O

[stoo-dee-oh] -n.
1. the workroom or atelier of an artist
2. a room or place for instruction or experimentation
3. a room or set of rooms specially equipped for radio, television and film
Before

- **ART**
- **MUSIC**
- **TECHNOLOGY**
- **SCIENCE**

After

**creative studio**

- **Resource Space**
  - Prep for Experiments or Clean up
  - Supplies for Larger Open Space
  - Mixed Media Resources
  - Focused Group Collaboration
  - Tackable Space
  - Mini-Lecture

- **Craft Corner**
  - Tables for Cutting, Mounting, Etc.
  - Mount Photos, Art Work, Essays
  - Presentation Boards for Science
  - Cutting Tables
  - Spray Booth
  - Water, Glue, Scissors, Etc.

- **Technology Zone**
  - Computers for Digital Arts
  - Graphic Stations: Technical Skills
  - Cluster of Technology
  - Research Stations: Data & History
  - Available Resources for Reference

- **Open Space**
  - Student Presentations
  - Group Discussion
  - Critique Space
  - Easels Around Central Still Life
  - Experiments by Moving Tables
  - Demonstrations for Groups

**FULLY INTEGRATED DESIGN & CURRICULUM**

**AFTER**

**BEFORE**

- **ART**
- **MUSIC**
- **SCIENCE**
- **TECHNOLOGY**
…she plans to take her Golden Elementary School students out of the classroom to a local park to observe habitats for local animals. Her students will write their observations and thesis and use math in their scientific calculations.
Problem solving can easily be linked to real-world applications, and students will see the connection across subjects, said Sandra Lapham, director of curriculum and instruction.
BASELINE MONITORING OF CLASSROOMS 7 AND 8

PROVIDED BY SUN BELT CONTROLS

HVAC ENERGY TOTAL

HVAC COMPRESSOR ENERGY

LIGHTING ENERGY

PLUG LOAD ENERGY

ROOM TEMPERATURE

ROOM RELATIVE HUMIDITY

ROOM CO2

ROOM LIGHT LEVELS (INTERIOR & PERIMETER)

DOOR MONITORING SWITCH

OUTSIDE AIR TEMPERATURE + HUMIDITY
Ceilings: improved acoustic performance

Linoleum: durable, healthy

Carpet: walk-off

Carpet Tiles: durable with recycled content

Casework: modular to allow for flexible use and storage

Displacement Ventilation: better air quality, reduces energy demands located in each corner

Lighting: indirect direct with whiteboard lighting and lutron controls system

Technology: integrate technology provided by district

Insulation: insulate exterior walls

Tubular Daylighting: natural daylight and energy savings
Partnerships

Curriculum: PEAK
Research: University of California Irvine, Social Ecology

For more information:

www.usgbc-oc.org
prove it: bringing passion to the classroom
ERIK RING, PE, LEED BD+C
Assessing Learning Environments:
Thinking inside the Box

Leadership | Creativity | Passion
assessing classroom education
assessing classrooms
How can school buildings impact how students...

...hear

...breathe

...see

...feel

...think & feel

...move

center for green schools
Better Classroom Ventilation Means Fewer Absences

Association of classroom ventilation with reduced illness absence: a prospective study in California elementary schools (May 2013)
Mark Mendell, Ekaterina Eliseeva, Molly Davies, Michael Spears, Agnes Lobscheid, William Fisk and Michael Apte

<table>
<thead>
<tr>
<th>MEASURED:</th>
<th>median peak CO2 concentration (ppm)</th>
<th>median estimated ventilation rate (l/s/person)</th>
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<tr>
<td><strong>School district</strong></td>
<td></td>
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<tr>
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<td>1140</td>
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<td>1400</td>
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<tr>
<td>AC</td>
<td>2280</td>
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</tbody>
</table>

**CODE:**

- < 1000 ppm
- > 7.10 l/s/p (15 cfm/p)
if all K12 classrooms in California had proper ventilation:

- 3.4% fewer student absences
- $4M higher energy costs
- $33M higher state funding
- $80M reduced caretaker costs

Lawrence Berkeley National Laboratory
assessing hvac systems in classrooms
davis magnet school
Costa Mesa, CA
Newport-Mesa Unified School District

USGBC Orange County Chapter “Greenovation” 4th Grade Classroom with adjacent ‘Control’ Classroom

- thermal displacement ventilation
- lighting systems
- skylights
- new finishes
thermal displacement ventilation concepts
thermal displacement ventilation systems
first day
how are we doing (so far)?
montgomery middle school
San Diego, CA
Sweetwater Unified School District

40,000 sf Addition
18 Classrooms, Library, Counseling, Food Service

$18M, Occupied in July 2013

- operable windows
- thermal displacement ventilation
- single-zone VAV rooftop DX units

montgomery middle school
floor plan

- library
- classrooms
- lunch shelter
- courtyard
- counseling
- classrooms
- food service
mixed mode hvac system
classroom
hvac units
airflow & co2 monitoring
how are we doing (so far)?
questions?