Thinking Outside the Box

The Science of Learning

The Language of Nature

The Art of Innovation
The Language of Nature

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The Science of Learning

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The Art of Innovation

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The biggest mistake of past centuries in teaching has been to treat all children as if they were variants of the same individual and thus to feel justified in teaching them all the same subjects in the same way (Howard Gardner)
Science of Learning
Science of Learning

• Fit the learner to the learning environment?

  Or

• Design the learning environment around the learner?

  Or

• Design the learning environment around the learning and the things to be learned?
Evidence of student understanding is revealed when students apply (transfer) knowledge in authentic contexts. (Tomlinson and McTighe).
Science of Learning

- Who is the learner?
- What is the learning environment?
- Where does learning taking place?
- How does Learning take place?
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- Reflective Space
- Engagement Space
- Proximal Space

Chemistry Lab, University of Melbourne/ Associate Professor Peter Jamieson with Bloomquist & Wark Architects
Children already come to us differentiated. It just makes sense that we would differentiate our instruction in response to them (Tomlinson).
Science of Learning

Defined / Integrated Collaborative Spaces support (flow/flexible/fluid)
- Independent work
- One-to-one
- Small Group
- Large Group

Learning Environments
- Defined Collaboration Spaces
- Integrated breakout zones outside/adjacent & attached to instructional spaces

Holy Cross College – EIW Architects

School of One / Dull Olsen Weekes & the Cuningham Group
Collaboration means “to work jointly with others or together especially in an intellectual endeavour.”
Collaborative Spaces *(Duality of use, Differentiated / Integrated)*

Classrooms
- **Formal**
  - Pods
  - Layered
Collaborative Spaces (Duality of use, Differentiated / Integrated)

Breakout Rooms

• Semi-formal Spaces
  o Practice Rooms
  o Work Rooms
  o Lounges
Collaborative Spaces *(Duality of use, Differentiated / Integrated)*

**Breakout Niches**
- Informal Spaces/Spontaneous
- Small group & independent learning
  - Alcoves
  - Seating Booths
  - Corners
Collaborative Spaces (*Duality of use, Differentiated / Integrated*)

Breakout Hollows ("Holes")
- Informal Spaces
- Independent & small group learning
  - Seating
  - Caves
Collaborative Spaces (Duality of use, Differentiated / Integrated)

Breakout Nodes-Spaces that create spaces

- Informal Spaces/Spontaneous
- Large group, small group, & independent learning
  - Raised &/or depressed floor areas
  - Grand Stairs
  - Pavilions
Language of Nature
Language of Nature

Research confirms that learning outdoors:

- Increases attention span
- Strengthens memory
- Reduces stress
- Improves mood
- Enhances creativity
Language of Nature

What is an Outdoor Learning Environment?
A place that stimulates curiosity

Plant Life
Natural patterns, proportions, native and regional habitats stimulate biophilia

Scale of Learning
Individual reflection, small group shared learning and large group gathering

Sense of Enclosure
Framing a view, orientation for light, and protection from the elements
Language of Nature

Music of Nature
Symphony of sounds, bird habitat, water features, and human laughter

Linguistic Reflection
Poetry, quotes, and dedications provide places for individual introspection

Change in Elevation
Challenge a vertical transition to become a perspective teaching tool

Edible Landscape
Where food comes from, when to plant and harvest, how to grown and thrive
Language of Nature
Seton Montessori Environmental Atelier
Language of Nature
The College School Adventure Center
Rural Acreage Designation
Language of Nature

The College School Adventure Center

Convergence
Language of Nature

The College School Adventure Center

Interconnectivity
Language of Nature

The College School Adventure Center

Aerial Photo
Language of Nature

Gary Comer Youth Center Educational Garden  
Urban Brownfield Site
Language of Nature

Gary Comer Youth Center Educational Garden Master Plan

A. Educational Pavilion
B. Demonstration Garden
C. Festival Plaza
D. Urban Agriculture Research Institute
E. Farming Families
F. Destination Pavilion
G. Outward/Inward Bound Annex
Language of Nature

Gary Comer Youth Center Educational Garden

A. Educational Walls located 18'-0” on center
B. Demonstration Counter
C. Washing and Sorting Counter with sinks
D. Large Double Wide Refrigerator
E. 16' wide Sliding Door
F. 16' wide Pivot Doors
G. Accessible Toilet
H. Storage
I. Water Collection
J. Green Walls located 18'-0” on Center
K. Demonstration Garden Kitchen Community

Educational Pavilion

Sketch showing four 40' Shipping Containers
Language of Nature

Gary Comer Youth Center Educational Garden

Educational Pavilion

Temporary Building or Temporary Classroom

Modular kit of parts built off site, assembled on site
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Gary Comer Youth Center Educational Garden

Educational Pavilion

Wall: Grow Display Illustrate Storage

Roof: Light and Ventilation Storage Energy and Water Harvesting
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Gary Comer Youth Center Educational Garden

Educational Pavilion

Door: Welcome

Pivot

Sliding

Counter: Washing Cooking Teaching Packing Cooling
Language of Nature

Gary Comer Youth Center Educational Garden

Learning Gardens serve as engaging, outdoor classrooms and experiential play spaces.

Planters: Accessible Movable Collaborative

Seating: Stackable Foldable Durable

Educational Garden
Language of Nature

Gary Comer Youth Center Educational Garden

Educational Garden
Art of Innovation

知悉更多关于世界
- 变成全球公民

跳出框框思考
- 创新和创新技能的优先级
- 跨学科思考（那里是突破发生的）

变得对信息来源更聪明
- 数据 - 知道如何管理、解释、验证、行动

发展良好的人际技能
- EQ 和 IQ 一样重要

Source: Time Magazine, December 2006

Creative thinkers who accelerate innovation.
Art of Innovation

7 Survival Skills:
• critical thinking and problem solving
• collaboration across networks and leading by influence
• agility and adaptability
• initiative and entrepreneurship
• effective oral and written communication
• accessing and analyzing information
• curiosity and imagination

The Four C’s:
• Critical Thinking
• Communication
• Collaboration
• Creativity and Innovation
Art of Innovation

7 Survival Skills:
- critical thinking and problem solving
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- accessing and analyzing information
- curiosity and imagination
- creativity and innovation
(from Creating Innovators)

The Four C’s:
- Critical Thinking
- Communication
- Collaboration
- Creativity and Innovation
Survey of 1,500 CEO’s: “identify creativity as the number one leadership competency of the successful enterprise of the future”

Art of Innovation
## Art of Innovation

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Quadrant 1

Archimedes

Quadrant 4

Drawing entitled “Café Manoury”, Paris
Art of Innovation

what is it? three guesses…..
Art of Innovation

from this....... to this.......
Other Bell Lab Inventions/Innovations:
  to name just a few….

- The telephone (and the entire infrastructure to support it)
- Vacuum tubes
- Trans-Atlantic cable
- Telstar – the first active communications satellite
- Silicon solar cell
- The unix operating system
- The first gas laser
- Cell phone mobile phone system
- Information theory (Claude Shannon)
- Binary code system
BLUE VALLEY SCHOOLS
CENTER FOR ADVANCED PROFESSIONAL STUDIES

2011
Design Citation
National School Boards
Association

2011
Gold Award for Living, Working,
and Learning Environments
Center for Advanced
Professional Studies
2006:
Charge to Superintendent + Research “provide unique student learning opportunities that currently do not exist in the school district”

2007:
Feasibility Study
Presented the idea of a “Center Based Program” (CBP)

2008:
Search for Exec. Director starts (Donna Deeds starts April 1)
Programming workshops commence

2009/2010:
CONSTRUCTION
Pre-engineering in all High Schools while designing balance of CAPS strands
Full immersion into business classrooms

2011:
Full implementation
Evolution and sharing
NSBA Citation
Edison Award
Break out of school—look outwards.
Every decision we made had to answer the question... Does this look like a high school? Would you see this in a high school?

If so, then we made a different decision.

Donna Deeds
Executive Director
• State of the Art Strands
• Interstitial Innovation Areas for collaboration and exhibition
• Ubiquitous Professional Learning Community
• A Visual Identity
• Sustainability that teaches
BV CAPS Accelerator

Objective
To provide students with comprehensive training in all aspects of discovering, growing and managing an invention and/or business.
"Your proposal is innovative. Unfortunately, we won’t be able to use it because we’ve never tried something like this before."
“chance favors the connected mind.”

Source: Johnson, Steven. *Ted Talk*. 
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