Pilot Projects: Cost-effective means for transforming spaces incrementally to support 21st Century Learning
What ways of learning do school environments need to support?

1. Independent / Critical Thinking
2. Peer Tutoring
3. Collaborative
4. One-on-One
5. Lecture based
6. Project and Design Based Learning
What ways of learning do school environments need to support?

7. Learning with Mobile Technology
8. Performance & Presentation Based Learning
9. Learning in a Circle and Story Telling
10. Interdisciplinary Learning (Art Based and Naturalist)
11. Social Development
12. Teacher Collaboration
20th Century

What has a student memorized?

Student-centered

What does a student know? What can they do? How does a student discover?
20th Century

Passive Learning: Information only derived from textbooks, centralized technology or teachers

Student-centered

Active Learning: Any time anywhere research using dispersed technology in addition to textbooks and teachers
20th Century

Less Teacher Collaboration

Student-centered

More Teacher Collaboration - Team teaching
FLEXIBLE WALL OPENINGS & TRANSPARENCY
Grossmont Union High School District | Santana High School Library

Storefront Glazing
Demountable Partition Walls
Demountable Partition Walls

Digital Marker Board Concept
Touchable Screen to digitally capture important notes. Opacity of writing surface can be controlled. No more mess of dry erase markers and erasers.
Sliding Glass Doors

Sam Shaw School | Calgary, Canada

Google Offices, NY, NY | HLW
Sliding Barn Doors
Roll Up Glazed Doors
Folding Solid Doors
Skyfold Glazed Doors
Skyfold Vertically Folding Doors
ACOUSTICS
Suspended Acoustical Ceiling Tiles

Knauf Danoline Stratopanel
Seamless acoustical ceiling with random perforated pattern that works well with solatubes.
Acoustical Panels absorb reverberation.

Painted circles reflect light.
Acoustical Panels

The above work was developed under the design direction of Mariana Boctor, while in the employ of Fielding Nair International.
Acoustical Panels

Homasote panels
Fabric Wrapped Suspended Ceiling Panels:
Suspended acoustical panels perform better hung vertically rather than horizontally. The taller the panel the better, to have more area for higher sound absorption. If a panel is W high, then space them a distance equal or greater than W apart (but not much greater than W). See diagram below drawn from Architectural Acoustics by M. David Egan Page 60 Sound Absorption Chapter.

Panels should be made of 1” or 2” thick batt, Class A Fire rated fabric, and should be un-faced. If the panels are hung below exposed ceiling beams, the low frequencies that bounce off them will get trapped in the space above the beams. The panels should be suspended so that at least 12” falls below the bottom of the beams.

To test a fabric, blow through it to test it. Air should be able to pass through (so sound can pass through and stay trapped behind the fabric).

Acoustical Wall Panels:
For panels on walls, specify with no plastic backing. The backing would block the air flow.

Never paint acoustical panels or tiles, this would prevent sound from moving through it.

Mechanical Equipment and Ducts:
When reviewing cut sheets for mechanical equipment and bar equipment, look at the noise rating LwA. A is the weighted sound power. The lower the better.

Mechanical equipment on roof should be on vibration isolation units. Their vibration is what creates noise.

Only used lined HVAC ducts.

Additional Resources:
http://www.edfacilities.org/rl/acoustics.cfm
LBI/Boyd Acoustical and Tackable panels:
http://www.lbiboyd.com/acousticalsystems.htm

MBI Products –
http://www.mbiproducts.com/

MBI Products – Cloud-Lite Baffles (2” wide with woven sailcloth):

MBI Products –

Vicoustic- 3” black suspended panels:
http://www.vicoustic.com/ProdutoInfo.asp?Id=16

USG Design Studio Illusion panels:
http://www.usgdesignstudio.com/illusion.asp
LIGHTING, DAYLIGHTING & VIEWS
Daylighting and Views
Daylighting and Views
Daylighting and Views
Lighting that feels natural is proven to inspire and enhance human performance


LED products offer color rendering and the delivered lumens to achieve a natural, daylit effect
LED fixtures for 21st century schools can help:

✓ Energy efficiency grants and cost incentives

✓ Bright Schools Program http://www.energy.ca.gov/efficiency/brightschools/

✓ Long service life of school buildings + notable longevity of LED sources

✓ Better “Indoor Light Quality”

✓ Eliminate shadows and “dark spots” with better luminance

✓ Maximize seating arrangements with more consistent photometrics

✓ Lighting that is easy to use and control

✓ Control systems that support other classroom technologies

Increased educational technology use = increase in overall energy demand
Pendants

Create evenly lit learning spaces through the use of direct/indirect lighting which allows flexible FF&E arrangements

Fixtures are easy to access and easy to service

Support new technologies used in the classroom with ease, alternating between dimming, bright and A/V modes

Provide greater energy efficiency with onboard occupancy sensors
Recessed Lighting

Most frequently specified light source and most cost competitive for classrooms

Replacing fluorescent fixtures in modernizations, either 1:1 or fewer fixtures

Many lens types provide varying light distribution and fresh aesthetics

Many new lighting solutions are possible with recessed linear LED
WALL FINISHES
Surfaces that make learning explicit

Sharewall-Full Wall Dry Erase & Projection Surface
Mooreco

Insight- Magnetic Glass Dry Erase Board
Mooreco
LIGHTWEIGHT & MOBILE
FURNITURE, FIXTURES & EQUIPMENT
The above work was developed under the design direction of Mariana Boctor, while in the employ of Fielding Nair International.
Flexible Furniture for the 21st Century Classroom

Furniture that is lightweight, easy to move and store allows teachers and students to nimbly jump from one learning modality to another. Moveable chairs, folding tables, and portable boards allow occupants to easily rearrange spaces according to their needs.

FlipTop-RU/FlipTop-SV
VS International

Rondo adjustable height tables
VS International

This dry-erase board can act as both a presentation board and a table

VerTable Isis
Flexible Furniture for the 21st Century Classroom
Flexible Furniture - Ergonomic seating helps students focus

A variety of seating options within the classroom gives students a choice for how they work best.

VS International is a leader in ergonomic school seating. Some of these chairs stack, most rock a little to help students concentrate better.

Bar height stools are great for subjects such as math in which teachers need to come to students desks to help them. This height makes it so the teacher does not have to hunch over the students desk.
**Flexible Furniture - desks**

*Changeable Tables Shuttle Systems*

Table systems that allow for a “changeable classroom” that also easily integrate technology and wire management.

*Mediamobil VS International*

*Sit and Stand desk VS International*

*Lite Table VS International*
Creating Smaller Spaces- Moveable Partitions

Factors to consider:

- MOBILITY
- PERMANENT VS TEMPORARY
- TRANSLUCENT
- AUDITORY PRIVACY
- STUDENT DISPLAY
Creating Smaller Spaces- Moveable Partition

Jet Screen
ISIS

Sound absorbing BuzziScreen
BuzziSpace

Folding Partitions
Peter Pepper

TopMobil Circle Mobile frame board
VS International
Creating Smaller Spaces- multiple learning zones

“Pod” furniture systems and seating with extra high backs allow several groups to easily meet in the same space.
Mobile Storage

Series 600 Storage Module
VS International

Transfer Teach
VS International

Series 600 Tambour
Cupboard
VS International

S600 Stand at Unit
VS International

Series 600 Media Rack
VS International

Transfer Unit with Storage
Boxes
VS International

Transfer Unit View from metal
back panel
VS International

Series 600 Compass Storage
VS International
Spaces for social emotional learning
Teachers as Professionals- Offices and Lounges

Vital Range
ISIS

Agil Workstations
ISIS

Information Center
Gressco
Teachers as Professionals - Offices and Lounges

My Caddy Mobile Storage
VS International

Open Collaboration Shuttle Systems

Techera Shuttle Systems
Teachers as Professionals - Offices and Lounges

Circa
Modular Seating
Steelcase

Detour Lounge and Ottoman
Steelcase

Groove
Steelcase
TECHNOLOGY
Technology, any time any where

Alpha Cart by Mooreco Inc.

Mobile electric IWB stand by Mooreco Inc.

Power bar charging station by Smith System

IO post table charger by Smith System
Technology, any time any where

media scape
Steelcase

Google Campus, Silicon Valley, Clive Wilkinson Architects

Flat panel wall mounts
Mooreco Inc.

Wall mount projector
Mooreco Inc.

Flower Power
ISIS

Mobile Smart Boards
Technology, any time any where

How It Works:

• Open the media well and remove a Puck™
• Connect the Puck™ to your laptop
• Share what is on your laptop by pressing the Puck™
• All team members can do the same and share their screen whenever they wish to.
THE STORY

• The District wanted to begin researching FF&E for new ed specs for 21\textsuperscript{st} C. learning plus new and unknown educational strategies that will be used 10, 15, 20 years from now.

• 4 vendors participated and worked collaboratively with the District and master plan architects

• FF&E rotated every semester for one year on 4 campuses

• Post Occupancy Evaluations
THE WISH LIST

- Lightweight pieces that are easy to rearrange by students and teachers for flexibility.
- A variety of seating and desks for working in clusters and to empower choice
- Multi-functional pieces
- Moveable storage (to eliminate millwork)
- Technology that works with the concept of a room not having a front (i.e. teaching wall)
- The room must be able to be reconfigured in at least 4 ways to support multiple learning modalities.
What can we do in a flexibly furnished 1, 200 – 1,300 s.f. classroom?

1) Allow for environmental control by the users: (i.e. reconfigure the classroom environment in 5 minutes maximum)

2) Accommodate at least four different styles of learning simultaneously Space for students to relax, reflect and socialize

3) Flexibility for trans-disciplinary teaching/planning

4) Quiet spaces for small tutorials and break out groups

5) Have an environment that makes learning a natural life-long habit rather than an activity only associated with being inside of a classroom

6) Support the “flipped-classroom” concept

7) Spaces for large group presentations and performances

8) Use technology to engage students

9) More floor area to have more kinesthetic learning space

Concept
1200 s.f. classrooms:
35-40 students
4 rotating clusters
El Modena High School Pilot Project

**Discovering a New Model:**
Large classrooms with a Commons within the footprint

Pilot project
960 s.f. classrooms:
- 25-30 students
- 3 rotating clusters

Master Plan
1,300 s.f. classrooms:
- 40 students
- 4 rotating clusters
WHY FOCUS ON FF&E?

- For teachers to facilitate multiple ways of learning simultaneously
- Because collaboration has become an essential teaching and learning strategy, the selection of the most versatile FF&E has become a strategic decision.
- Creates a learning environment that boosts morale, is comfortable and promotes student and teacher health
- Provides students with choices for how they learn best, which increases engagement and decreases behavioral problems
WHY FOCUS ON FF&E?

• Agile and stackable furniture decreases maintenance labor when cleaning classrooms, by eliminating the need to move furniture out and back into the classroom.

• Comprehensive, “bumper to bumper” warranties. FF&E has a huge impact on learning outcomes and behavior. High ROI for the investment.

• Negotiating Power. Piggy backing on other school districts receiving discounts.

• Spec with bid alternates. Select a few vendors to develop a relationship with who understand your District’s needs and goals.
Steelcase 960 s.f. existing classroom for 36 students
Steelcase 1200 s.f. future classroom for 36 students
1200 s.f. future classroom for 36 students
**STUDENT BEHAVIOR QUESTIONS.** Please circle the number that most represents your opinion.

<table>
<thead>
<tr>
<th>In this renovated classroom, it is easier /harder to:</th>
<th>a lot harder</th>
<th>a little harder</th>
<th>about the same</th>
<th>a little easier</th>
<th>a lot easier</th>
</tr>
</thead>
<tbody>
<tr>
<td>make learning a natural life-long habit rather than an activity only associated with being inside of a classroom</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>gain confidence in my ability to manage and sustain this renewed commitment of engaging in class activities</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>keep myself motivated to achieve my learning goals</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>feel optimistic about being able to more directly engage in my own learning by actively participating in class</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>feel confidence in my ability to develop healthy study habits in an effort to succeed in my overall academic studies</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>to expect that due to my efforts in this class I will obtain a higher course grade</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>consider this class as an enriching educational experience</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Student Survey – sample questions
In this renovated classroom, it is easier /harder to:

• To engage in a different style of learning than other students were engaged in at the same time (example: independent, collaborative, project based, one on one).

• Take on challenging academic work by collaborating with my peers.

• Work independently when I wanted to. (e.g., space to take a break from being part of a group to process what you are learning or creating on your own).

• Make learning a natural life-long habit rather than an activity only associated with being inside of a classroom.

• Gain confidence in my ability to manage and sustain this renewed commitment of engaging in class activities.

• Feel optimistic about being able to more directly engage in my own learning by actively participating in class.

• To expect that due to my efforts in this class I will obtain a higher course grade.
Student Post Occupancy Survey
Tally of all questions

- 71% A LOT EASIER
- 27% A LITTLE EASIER
- 21% ABOUT THE SAME
- 5% A LITTLE HARDER
- 3% A LOT HARDER

991 surveys counted
Student Survey - comments

“I really like this new furniture. It really suits the classroom and it is helpful that we can move everything so quickly. I work better and more effectively in this classroom because of the furniture.”

“It allows me to more easily engage with all other students while working and then quickly change to facing the teacher.”

“It makes me feel like I’m in a more professional learning area”
Student Survey - comments

“The new room makes us excited and happy to come to class. It has a modern look and is a more comfortable environment learn.”

“The desks and chairs are easy to move which has made learning easier. We no longer have bulky furniture that is hard to move, instead we have furniture that moves with a breeze. The chairs don’t hurt my back and we finally have room to move around. I wish every class was like this.

It’s pretty sick.
Teacher Survey
In this renovated classroom, it is easier /harder to:

• Allow students to engage in four different styles of learning simultaneously (example: independent, collaborative, project based, one on one)

• Have students participate in class and enjoy it

• To integrate students who need learning assistance rather than having to isolate them by pulling them out to separate enclosed spaces (i.e. There was space for tutorials or break out groups)

• Do you believe the furniture tools provided will facilitate new and unknown educational strategies that will be used 10, 15 even 20 years from now, without needing to spend more?

• Do you feel the furniture tools are only responding to today’s current needs?
Teacher Survey

“My new space is inviting and organized. My goals for the year revolve around increasing critical thinking skills in preparation for both SBAC and college and career readiness. The newly renovated room is bright and welcoming. The movable/adaptive desks assist students in many ways, the most important being that they are super easy/flexible; pairs/trios/solo-student feel comfortable adapting the environment for each activity. They arrange themselves to meet the needs of the people and the demands of the task. I have enjoyed greater engagement and an intrinsic motivation than I have ever known. The new room is amazing.”