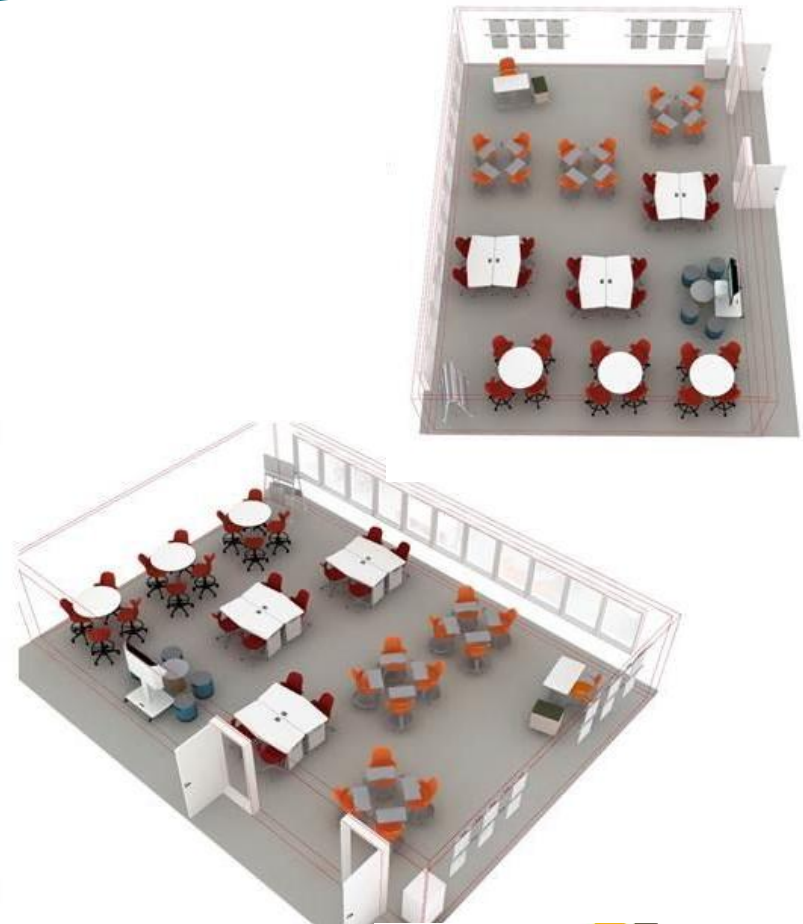


Pilot Projects:

Cost-effective means for transforming spaces incrementally to support 21st Century Learning



HARLEY ELLIS DEVEREAUX

What ways of learning do school environments need to support?



1. Independent / Critical Thinking



2. Peer Tutoring



3. Collaborative



4. One-on-One

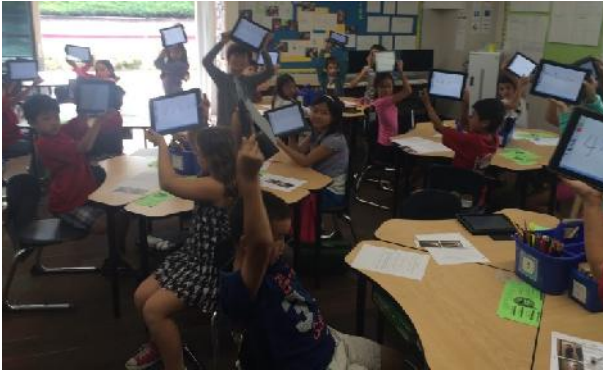


5. Lecture based



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 any where 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



International School of Brussels, Middle School Brussels, Belgium | FNI



Demountable Partition Walls



Demountable Partition Walls

Digital Marker Board Concept

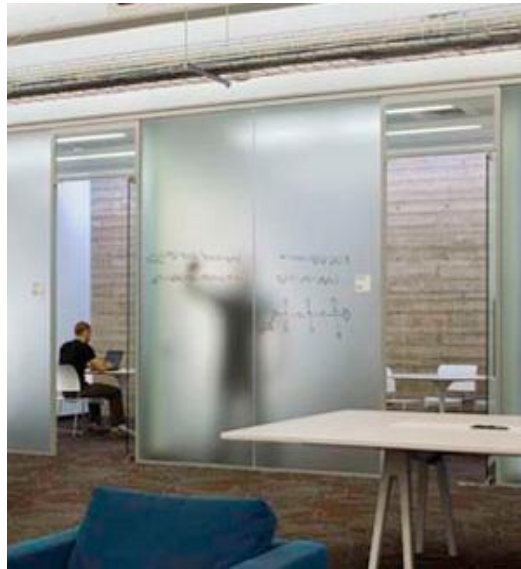
Touchable Screen to digitally capture important notes. Opacity of writing surface can be controlled. No more mess of dry erase markers and erasers.

Transparency

Sliding Glass Doors



Sam Shaw School | Calgary, Canada



Google Offices, NY, NY | HLW

Sliding Barn Doors



Forest Ave Elementary | Middletown, Rhode Island | Fielding Nair International



Chartwell School | Seaside, CA



Cristo Rey High School | Minneapolis, Minnesota | FNI

Roll Up Glazed Doors



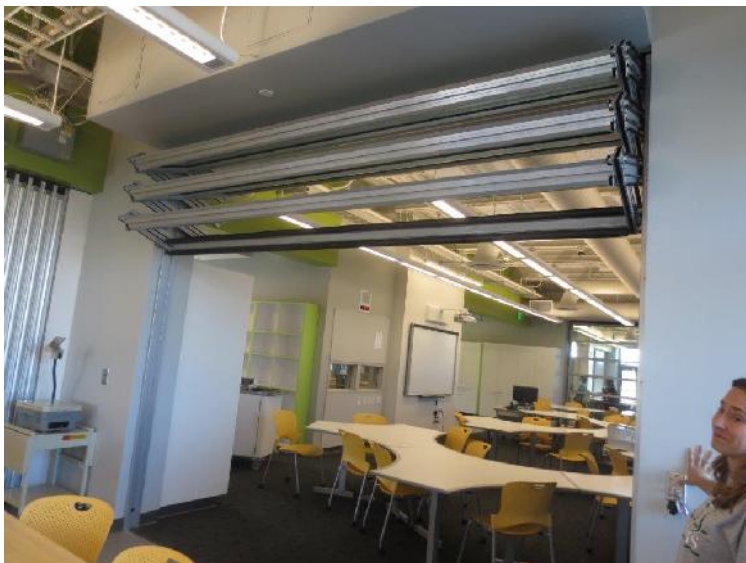
Google Offices, NY, NY | HLW

Folding Solid Doors



Cristo Rey High School|Minneapolis, Minnesota

Skyfold Glazed Doors





Folding Glazed Doors





Sam Shaw School | Calgary, Canada

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

Acoustical Panels absorb
reverberation

Painted circles
reflect light



Acoustical Panels



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

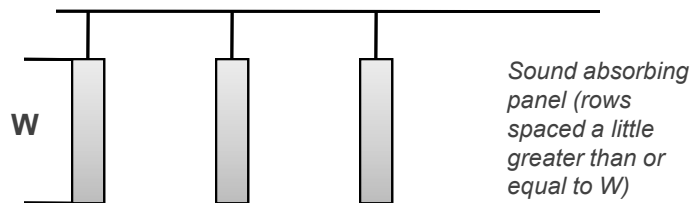
Acoustical Panels



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.mbiproducs.com/>

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

<http://www.mbiproducs.com/products/specifications.aspx?ProductID=2800-2020S>

MBI Products –

:

<http://www.mbiproducs.com/products/specifications.aspx?ProductID=1500-2060>

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

http://www.archlighting.com/daylighting/the-benefits-of-natural-light_o.aspx



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/brightschoools/>
- ✓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 Bactor, 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



Panto Move
VS International



Panto Swing
VS International



Hokki Stool
VS International

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.



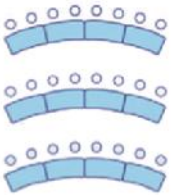
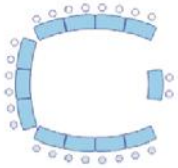
Solo Stool
VS International



TH35 Stool
VS International

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.



Flip Table TF
VS International



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



Series 2000
VS International

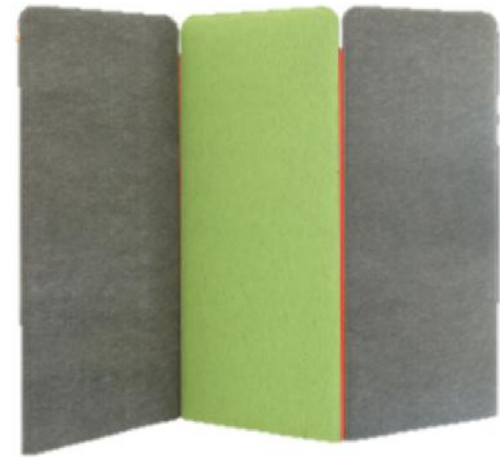


Groupwork Screen
Steelcase

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.



Nomad System
Space Oasis



Campfire
Turnstone



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



Sitz Couch
VS International



Cloud
VS International



Ripple
Steelcase



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

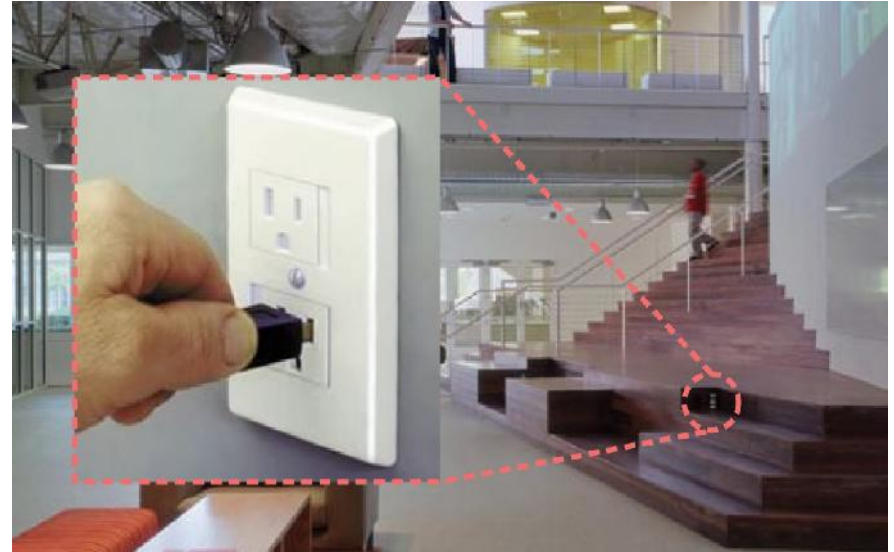


IO post table charger by Smith System

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



*Mediascape
Steelcase*



*Eno interactive whiteboard
Steelcase*



Mobile Smart Boards



THE STORY

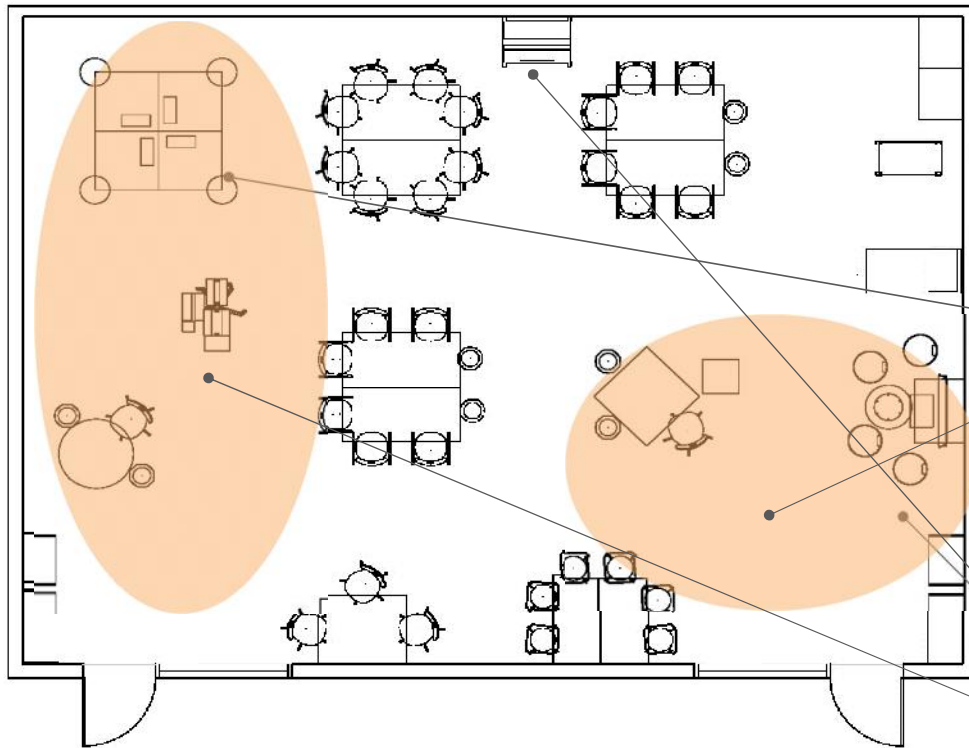
- The District wanted to begin researching FF&E for new ed specs for 21ST C. learning plus new and unknown educational strategies that will be used 10,15, 20 years from now.
- 4 vendors participated and worked collaboratively with the District and master plan architects
- FF&E rotated every semester 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?



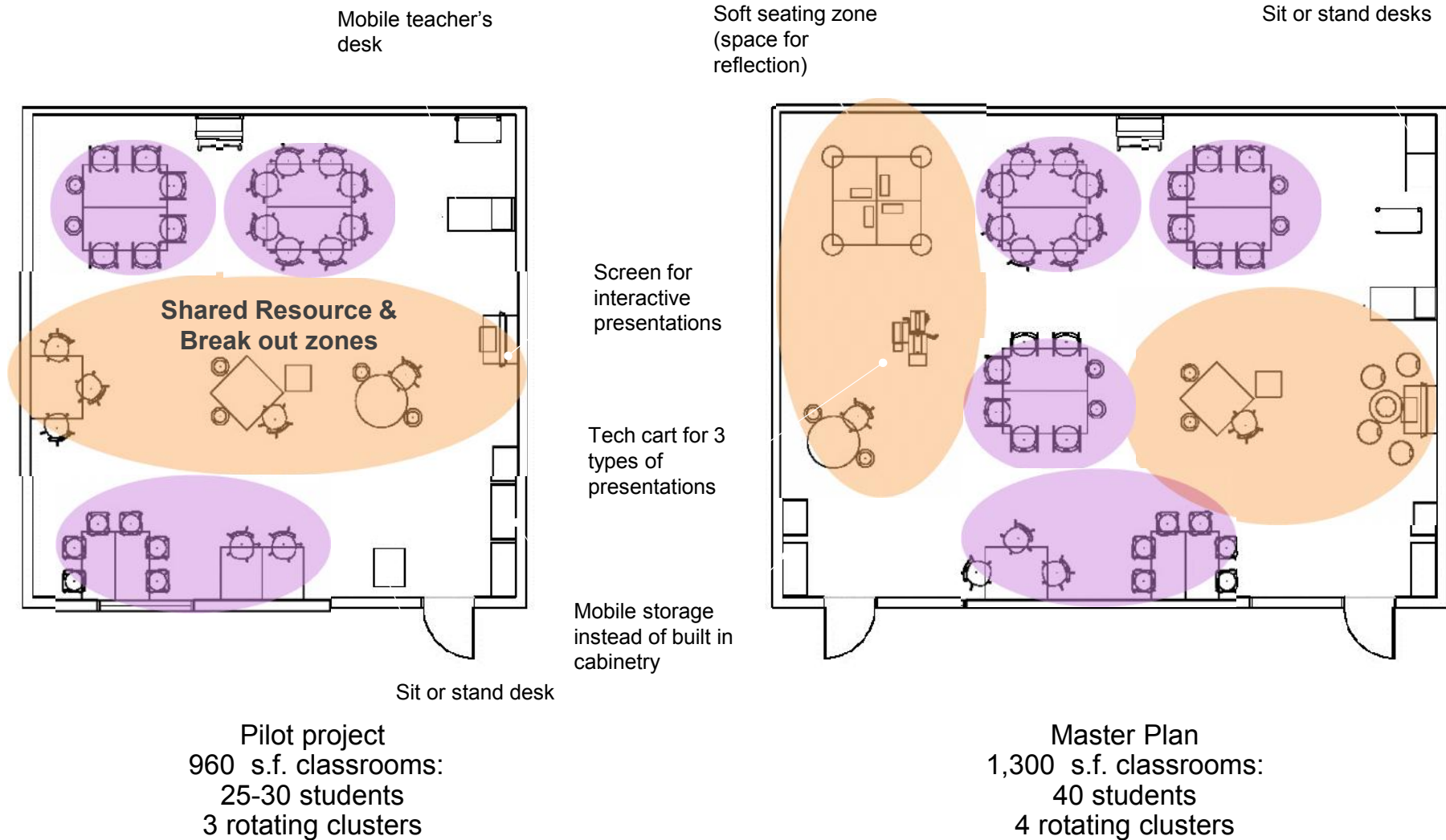
Concept
1200 s.f. classrooms:
35-40 students
4 rotating clusters

- 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

El Modena High School Pilot Project

Discovering a New Model:

Large classrooms with a Commons within the footprint





WHY FOCUS ON FF&E?

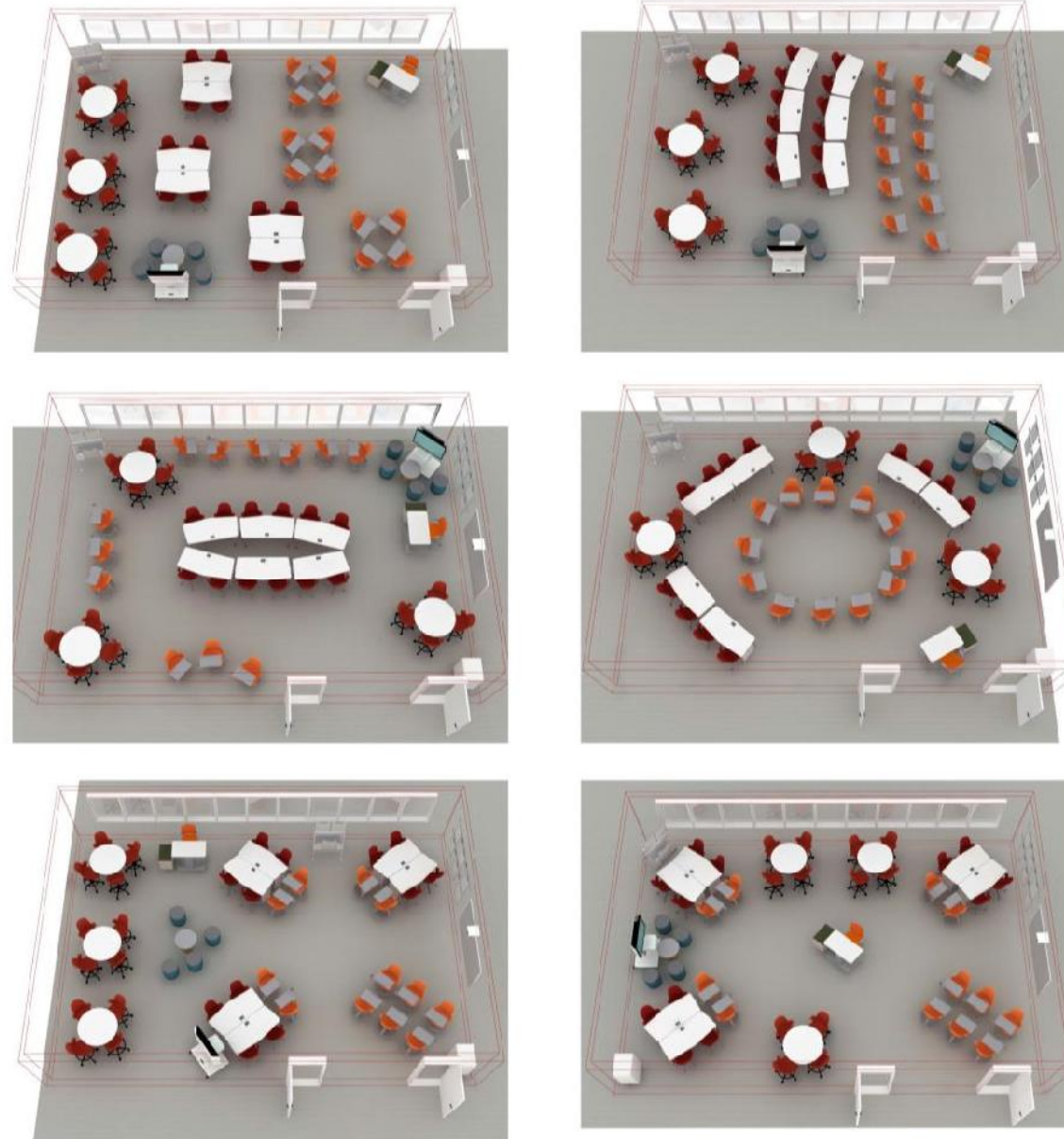
- For teachers to **facilitate multiple ways of learning simultaneously**
- Because **collaboration** has become an essential teaching and learning strategy, the **selection of the most versatile FF&E** has become a **strategic decision**.
- creates a learning environment that **boosts morale**, is **comfortable**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



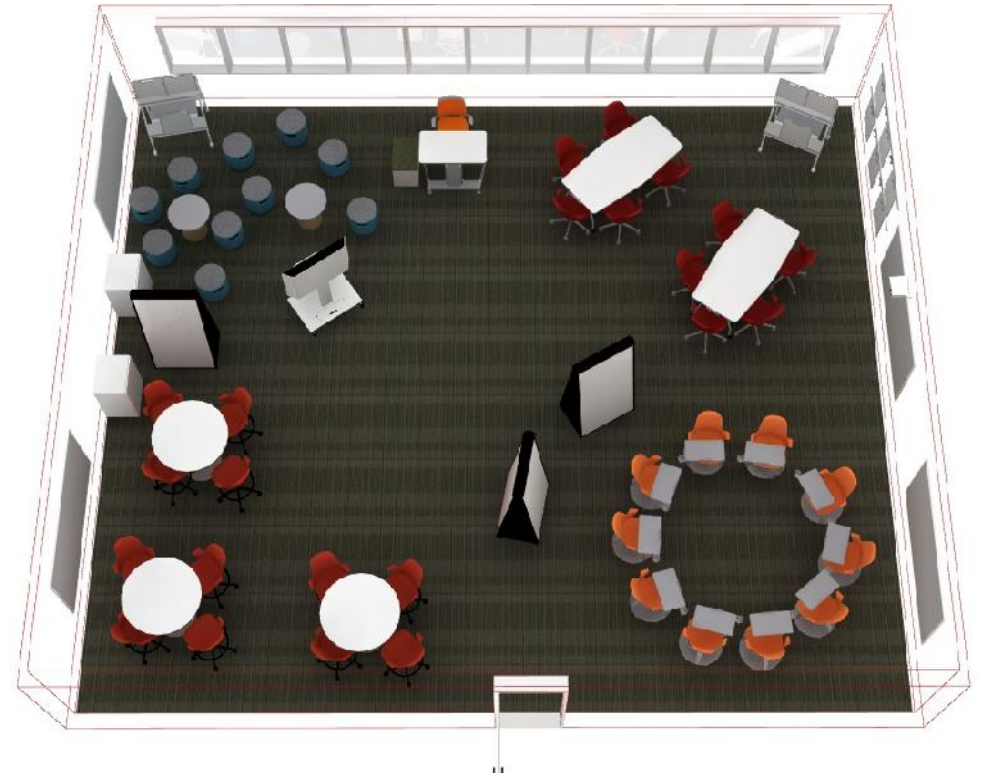
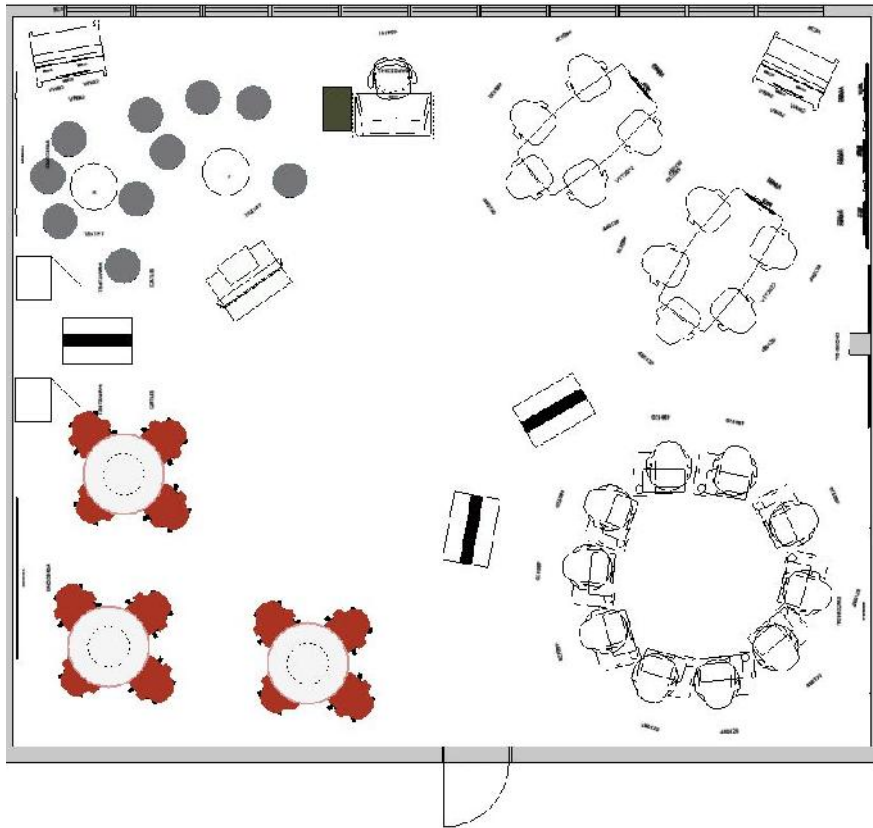


WHY FOCUS ON FF&E?

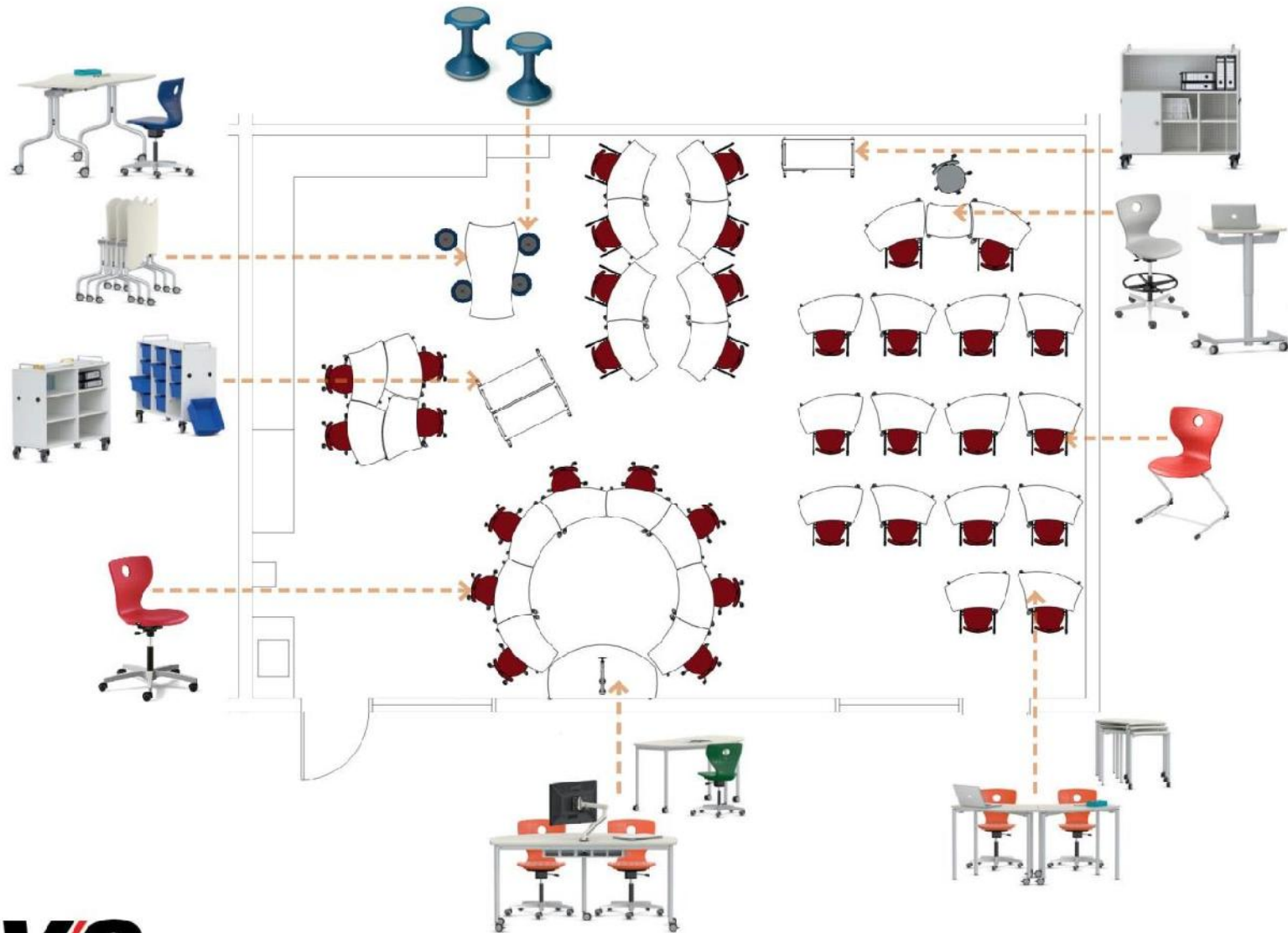
- Agile and stackable furniture decreases maintenance labor when cleaning classrooms, by eliminating the need to move furniture out and back into the classroom
- Comprehensive, “bumper to bumper” warranties. FF&E has a huge impact on learning outcomes and behavior. High ROI for the investment.
- Negotiating 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



V/S Shift+

ORANGE UNIFIED SCHOOL DISTRICT HS PILOT PROGRAMME
SHIFT + OPTION 2

1200 s.f. future classroom for 36 students







STUDENT BEHAVIOR QUESTIONS. Please circle the number that most represents your opinion.

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

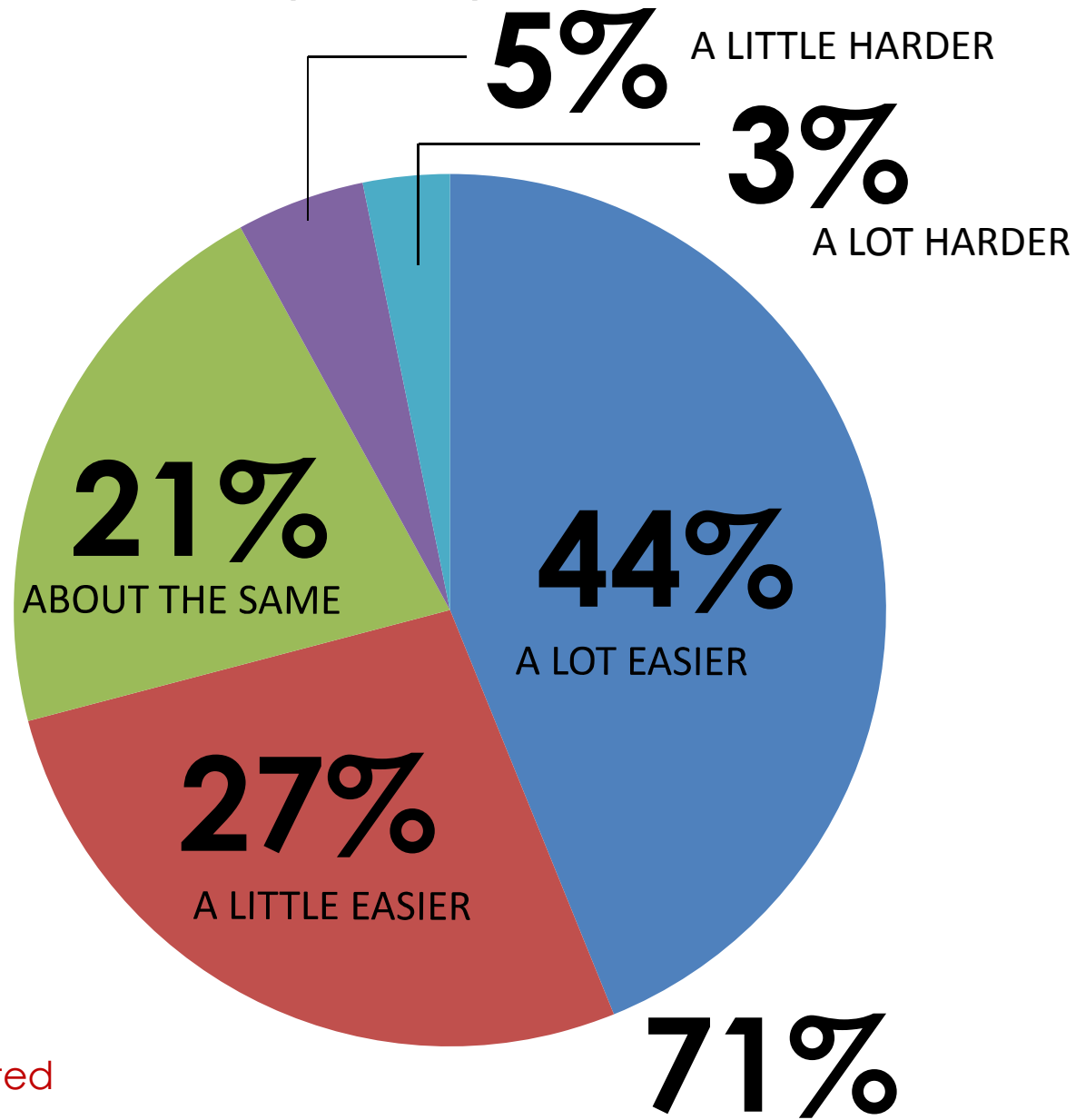
Student Survey – sample questions

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



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.”