Lindsay
Unified School District

21st Century Learning Environments

November 2013

Presented By:

PMI PROGRAM MANAGEMENT INTEGRATION, LLC.

21st Century Learning Environments

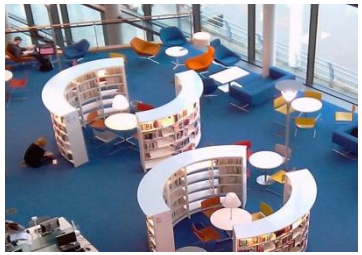
- Educational programs are evolving to meet 21st century demands
- A shift in teaching methods to support project based learning, common core assessments, linked learning, and academies/strands provide new opportunities for students and teachers to improve educational outcome
- As the “essence” of modern school facility design, innovative choices on furnishings, fixtures, and equipment (FF&E) will enable instructors to transform their teaching pedagogy
- The design of learning spaces should follow a uniform vision for innovation that promotes more effective teaching and learning to foster creativity, investigation, and inquiry

Integrating Mobile 1:1 Technology

Mobile computing devices places tremendous information at our student’s fingertips. Their deployment represents a dramatic advancement to the access and supply of learning materials. We must ask how we are reimaging and redesigning traditional educational facilities to accommodate these changes.

A New Approach to Libraries

A multimodal learning environment means that students are learning, researching, and discovering knowledge from a variety of sources. Students can access many books on their digital device and work collaboratively or individual on a variety of projects.

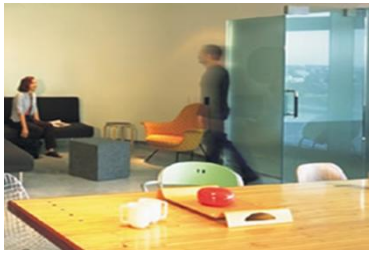


Making Room to Learn

Providing new active and quiet spaces is made possible by reducing book stacks and moving storage to flexible, movable, and modular shelving.

Flexibility and Creativity

The arrangement of furniture lends itself to interactions between students or students and teachers. Students can read, write, design, create, or discuss in a variety of arrangements, all of which can be reconfigured at a moment’s notice to support alternative activities.



Quiet Space Preserved

One to one workrooms allow students to step in with a teacher to complete independent study meetings or other discussions that might require a sound-isolated space.

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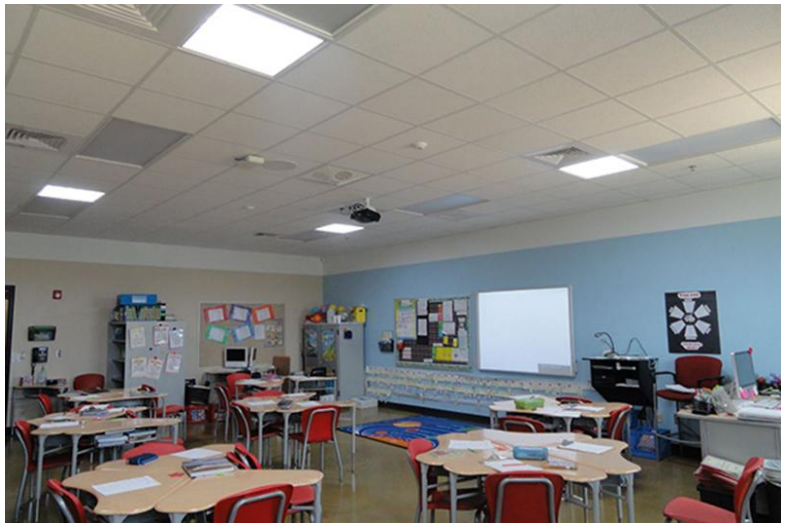
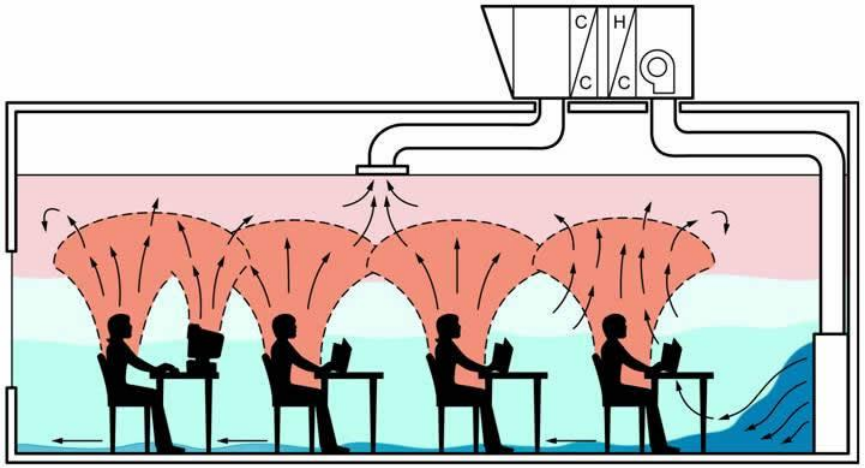
Learning Lab Components

DESCRIPTION	BENEFITS	COMPONENTS
WALL AND ROOF INSULATION	TEMPER INTERIOR ENVITONMENT	FOIL BACKED THERMAL INSULATION
	REDUCE ENERGY COSTS	
HIGH PERFORMANCE GLAZING	INCREASE DAYLIGHTING INTO SPACE	HIGH U-VALUE, HIGH SHGC
	REDUCE ENERGY COSTS	
SKYLIGHTS	INCREASE DAYLIGHTING IN AREAS REMOTE FROM WINDOWS	SOLATUBES
	REDUCE ENERGY COSTS	
HIGH PERFORMANCE ROOFING	REDUCE ENERGY COSTS	HIGHLY REFLECTIVE ROOFING
HIGH PERFORMANCE MECHANICAL SYSTEM	INCREASE THERMAL COMFORT	DISPLACEMENT VENTILATIN SYSTEM
	REDUCE ENERGY COSTS	
WATER CONSERVING PLUMBING FIXTURES	REDUCE WATER USE, ENERGY COSTS	LOW-FLOW TOILETS, LAVS, URINALS
HIGH PERFORMANCE LIGHTING	INCREASE VISUAL COMFORT	T-8 HO, T-5 HO, CFL AND LED LIGHTING
	REDUCE VEILING REFLECTIONS	
	REDUCE ENERGY COSTS (W/ DAYLIGHT SENSORS)	
LINK TO OUTDOORS	VISUAL INTEREST	DOORS, WINDOWS
	ADDITION OF EXTERIOR LEARNING SPACE	
LINK TO ADJACENT CLASSROOMS	TEACHING FLEXIBILITY IS ENHANCED	GLAZED FOLDING WALLS
VISUALLY STIMULATING INTERIOR FINISHES	COLORS/TEXTURES/GRAPHICS/VIDEO PROVIDES INTEREST	INTERIOR FINISHES
ACOUSTICAL FINISHES	CEILING/WALL/FLOOR TREATMENTS REDUCE REVERBERATION	CARPETING
	SPEECH INTELLIGIBILITY IS INCREASED	ACOUSTIC WALL AND CEILING PANELS
LARGE WRITING DISPLAY SURFACES	NUMEROUS MARKER BOARDS ALLOW EXTENSIVE DISPLAY OF MATERIAL	MARKER BOARDS, MARKER PAINT
MOVABLE FURNISHINGS	LIGHT/ROBUST/MOVABLE/GROUPABLE FURNISHINGS ALLOW	WHEELED/SLIDING/ADJUSTABLE-
	RAPID CLASSROOM RECONFIGURATION AND TEACHING FLEXIBILITY	HEIGHT FURNISHINGS
ELECTRONICS	QUICK LESSON RETREIVAL/INTERNET ACCESS/COLLABORATION	WI-FI/TABLETS OR LAPTOPS/VIDEO SCREENS

Learning Lab Components



Solatube Lighting



Displacement Ventilation

Reflective Roofing

Inside a Learning Lab

- **PROBLEM SOLVING**

✓ Students working in groups of 4 or 5 may need to tackle challenges that combine skills they have acquired in math, science and language arts

✓ The learning lab is designed to foster creativity, investigation and inquiry as well as collaboration

✓ It is designed for maximum flexibility and makes the students feel welcome and comfortable. The open environment allows students to participate at tables, move chairs to the center, stand along the wall-to-wall white board, or interact with the teacher by connecting wirelessly from their electronic device to displays

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Displays on each wall allow visual aids to be seen from any angle and make any side the “front” of the classroom

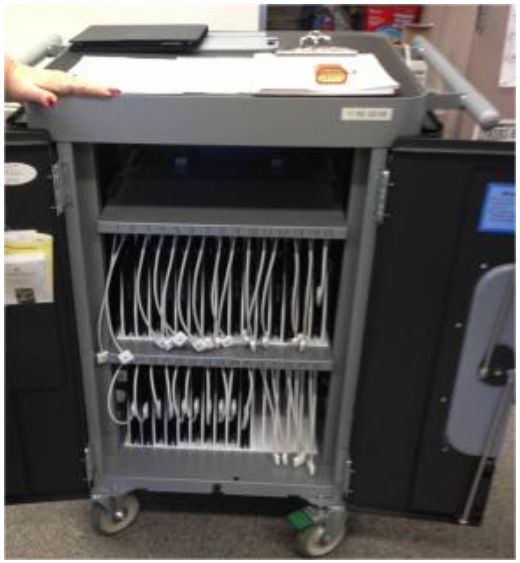
Inside a Learning Lab

- **STORAGE WITHOUT THE CLUTTER**

✓ In the classroom, there are multi-use carts to store student work and learning materials. At least one cart has the capability to recharge 1:1 devices

✓ Movable bookshelves store student work and learning supplies

✓ There are cabinets, but they are reduced in number compared to a traditional classroom. The need for supplies has been reduced by the use of the mobile devices which store textbooks and materials students need as well as provide internet access for research



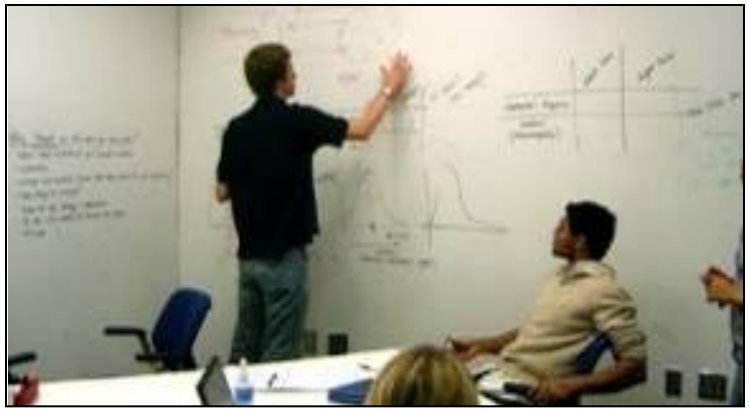
Flexible Learning Labs

- **FLOOR TO CEILING LEARNING**

✓ Multiple writable surfaces on wall surfaces throughout the classroom allow students and teachers to use available wall surfaces for drawing, writing, diagramming or group activities. By providing surfaces on each side of the classroom, there is no longer a single “front” or “back” wall. Magnetic layers on the boards allow for instructors to attach student exemplars where needed for instruction

- **NATURAL LIGHT OR USABLE SPACE**

✓ Walls with windowed surfaces may be covered by marker boards and/or tackboards that slide on a track so as to provide the option of obscuring the windows when additional writing surface is needed or darkening the room when natural light needs to be reduced



Learning Lab Academics

- NEW GENERATION OF SCIENCE LABS

✓ Providing a modern center for observation and investigation requires both physical and digital solutions. Students require space to work in groups and record their findings interactively

✓ Teachers need new ways to convey labs virtually, and lab classrooms can now be designed with interconnected flat screen displays that show a live image from the instructor's table, where, for example, the instructor may point out the equipment that will be used in an upcoming lab activity

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Learning Lab Academics

- **DESIGN & ENGINEERING OPPORTUNITIES**

✓ Another educational focus may provide specialty courses in science, engineering, and design

✓ An element of this curriculum may be the creation of a digital lab and provisioning of a “maker” lab where students gain experience in digital arts or robotics. These classes are to encourage student engagement and collaboration in learning as well as to expose them to information useful for future career opportunities or advanced training in high school and beyond

- **MODERN TOOLS FOR CREATION**

✓ Students sit at work stations equipped with professional and robust computing equipment. There are large high quality screens at the front of the room on which different instructional images are projected

✓ Students work on projects and are able to follow the teacher’s instructions by observing the screens

✓ The lab is organized as quasi-professional workstation areas that one might find in a modern architectural or graphic design firm

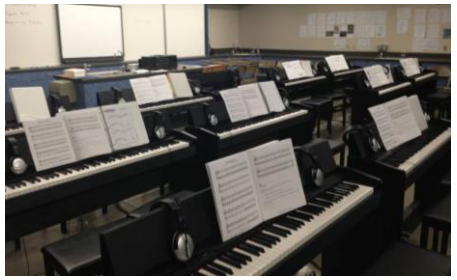
✓ The teacher monitors in the room, answering individual questions as appropriate or projecting information on monitors when more than one student is having the same questions or difficulty in the creation of the project

Learning Lab Academics

- **A NEW APPROACH TO THE ARTS**

✓ Educational programs may be designed that offer enhanced opportunities in the arts and humanities with little additional infrastructure cost

✓ One element of this curriculum may be the design and provisioning of an electronic piano keyboard lab. Students sit in rows of three or four keyboards across the room and four or five rows deep



- **MIXING, EDITING, AND SCORING DIGITAL MUSIC**

✓ Computer workstations can be provided that allow students working either individually or in a small group to experiment with digital composition of music. The workstations provide access to easy-to-learn software that can input student work on the piano and visualize the changes students wish to make

- **A QUIET ROOM FILLED WITH MUSIC**

✓ The room is very quiet. All of the students are highly engaged at learning to play the piano, but no noise is carried to neighboring classrooms thanks to headsets connected to each piano. Students hear only their own work, while the instructor has the ability to listen in and provide feedback to various students individual performance

Learning Labs & Kindergarten

- **A NEW GENERATION OF LEARNERS:**

✓ Our youngest children have incredible options in learning tools not available to prior generations

✓ The provision of Kindergarten classrooms can reflect this with differentiated stations for single or group activities, individualized to the pace of the learner

✓ One station may have a reading focus, another station a writing focus, a third station designing and building focus, and a fourth station a science or social studies focus. At two or three of these stations, the children are using a 1:1 mobile device as part of the activity

✓ Younger students leaning back, fidgeting or frequently moving about in their chairs distract from learning and reduce classroom focus on the educator. Active movement may be a sign of healthy behavior in an otherwise uncomfortable seating arrangement

✓ Children, like adults, benefit creatively and intellectually from modern furnishings that are ergonomically designed. A solution may include providing improved classroom furnishings that support the mind as well as the body