The Teaching Lab of Tomorrow

IFMA
Academic Facilities Council
Spring, 2014
lab space > bench space
EYP
Architecture & Engineering is a team of architects, engineers, and other professionals dedicated to expertise-driven design.

We are passionate about our work, inspired by our clients, and committed to shaping a better world through integrated sustainable design.

We believe that the best designs arise from a collaborative journey of discovery with our clients that reveals insights and spurs innovation.
top ten list
teaching laboratories when(thinking about) designing
multi-disciplinary
The rehabilitation and expansion of the existing Old Chemistry Building into the Science Teaching and Learning Center (STLC) is a component of a long range vision to enhance the existing sciences precinct on campus with STLC as one of the critical anchors.

The overarching goal of the STLC is to transform the learning and discovery process in life science education.
The mission of the Integrated Learning Environment is to provide state-of-the-art learning environments that facilitate a full range of active learning strategies and instructional technologies to enhance student learning and retention, as well as space that can be easily and economically modified over time to accommodate future requirements of new learning pedagogies and technologies.
Gallery
2nd Floor Collaborative Study Space
FOURTH FLOOR
Old Chem

Biology

12 pairs
or
6 groups of 4
Old Chem
Chemistry
6 groups of 3
Swing Laboratory

Group benches without legs

Chemistry:

group = 3

Biology:

group = 2 X 2
inter-disciplinary
Learning spaces that will facilitate and inspire the adoption of new active learning strategies across all disciplines and curricula.

- Flexibility to accommodate future teaching paradigms.
- Robust technology infrastructure supporting unparalleled internet connectivity.

Focus on students working in teams to learn through problem-based analysis and simulation - electronically as well as visually.
Virginia Tech

- Labs: 7%
- Informal Learning: 14%
- Classroom: 10%
- Support: 69%

47,955 total
Integrated undergraduate general science curriculum, in which students are designing and conducting experiments to answer questions at the interfaces of biology, chemistry, geology and physics.

Helping solve some of the world’s most pressing problems (water, energy, disease, poverty) through science.

Example:
develop and test nanoparticles to deliver genes to cells.
Interdisciplinary Teaching Laboratories
Virginia Tech
69%
14%
10%
7%
47,955 total

Stanford
24%
14%
28%
34%
37,210 total
long-term flexibility
Modularity:

11'-0"

Module

Long-term flexibility

1 M.

lab bench

fume hood

clear aisle

3"

3'-0"

5'-0"

2'-6"

3"

1 M.
Teaching Laboratory

24 students in Biology

Stanford Swing Lab

24 students in Biology

Long-term flexibility

Savings:

- 9%
- 18%
efficiency
Efficiency Strategies

40 foot Corridor:
10 feet wide = 400 sf

30 foot Corridor:
10 feet wide = 300 sf
Pedagogy

Pre-lab discussion in the lab
Pedagogy

Pre-lab discussion

not in the lab

20 students @ 25 sf

500 sf
adjacency
Science on display
“One of the design features that I really love is the openness, I love the way I can walk down what we call 1st Avenue and look into the labs and see what is going on. You feel connected”.

Ronald A. Crutcher
President, Wheaton College
Teaching Laboratory

24 students in Biology

Stanford Swing Lab

Visibility
Science on display

2'-6"4'-0"
Teaching Laboratory
24 students in Biology Stanford Swing Lab
Visibility
Science on display

Savings:
3’-6” X 30’
105 sf
- 9 %
daylight
Daylight

Rocky Mountain Institute
rmi.org

National Renewable Energy Laboratory
nrel.gov

- health
- attendance
- achievement
- safety

*people like natural light*
safety
TCNJ - TEACHING LAB
the teaching lab of tomorrow

Goals:

10. multi-disciplinary
9. inter-disciplinary
8. long-term flexibility (module size?)
7. efficiency
6. pedagogy
5. adjacencies
4. visibility (science on display)
3. daylighting
2. safety
1. ???
Use program pieces to create an affordable and accessible STEM learning environment

Write your story – begin with your goals

You have 10 minutes....have fun!
Create ... an affordable and accessible STEM learning environment

with your goals in mind

Build your learning environment

You have 20 minutes....have more fun!
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Create ... an affordable and accessible STEM learning environment

with your goals in mind

Share what you learned

step 3
The Teaching Lab of Tomorrow participants
The Teaching Lab of Tomorrow

participants