### Designing, Implementing, and Evaluating Innovative Learning Spaces: Experiences Wallenberg Hall, Stanford University

#### Dan Gilbert Stanford Center for Innovations in Learning Tokyo, Japan March, 2008

### "The best way to predict the future is to invent it" - Alan Kay, 1971



"There is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success, than to take the lead in the introduction of a new order of things. For the reformer has enemies in all those who profit by the old order, and only lukewarm defenders in all those who would profit by the new order..."

– Niccolo Machiavelli, The Prince, 1532



### Agenda

- The Main Point: flexible spaces, curricula, and organizations can increase efficiency (administrative gains) and effectiveness (learning gains)
- The Second Point: Emphasizing verbs (activity) over nouns (technologies) drives innovation for instructors
- What is Wallenberg Hall?
- What are people doing in Wallenberg Hall?
- What is working well? What are we still learning?
- Discussion



### An Interactive "Digital" Activity



# In general, how long is a 'generation' in information technology?

- 1. 1 year
- 2. 3 Years
- 3. 5 Years
- 4. More than 5 years



# In general, how long is a 'generation' in curriculum?

- 1. 5 years
- 2. 15 years
- 3. 25 years
- 4. More than 25 years



# In general how long should an academic building be useful?

- 1. 25 Years
- 2. 50 Years
- 3. 75 Years
- 4. More than 75 years

Conservatively, a learning space should support 10 generations of technology and 3 complete generations of curriculum - Flexibility in all systems is paramount



### "Build the Best Socket We Can Afford" - Prof. Larry Leifer, Wallenberg Hall Visionary





The *Peter Wallenberg Learning Theater* supports a broad range of disciplines and activities. September 27-28 2007.

*Above:* Professor Martin Fischer facilitates project work in Civil and Environmental Engineering

*Above Right*: Professor John Edmark's Studio Art students share reflections

*Right*: Dr. Gili Drori's lectures to Education and Sociology graduate students





### **Stanford Facts**

- ~ 6,800 Undergrads
- ~ 8,200 Graduate Students
- ~ 1,800 Faculty (17 living Nobel Prize Winners)
- Famous Alumni
  - Tiger Woods
  - Sergey Brin and Larry Page (Google)
  - Sigourney Weaver (actress)



### Dan Gilbert

- Academic Technology Specialist at Stanford Center for Innovations in Learning
  - works with faculty to design, carry out, and evaluate learning activities in the experimental spaces of Stanford's Wallenberg Hall
  - consults with campuses globally on designing new learning spaces.
  - published and presented on designing learning spaces and using social software to build learning communities
- Lecturer in Stanford's School of Education.
  - Developed and co-teaches Designing Learning Spaces (EDUC 303x: <a href="http://learningspaces.stanford.edu">http://learningspaces.stanford.edu</a> )
- Everything but the coder for high-tech start-ups
- ESL Teacher in the US and Japan for kids and adults
- Master's Degree in Learning, Design and Technology from Stanford (2002)



### What is Wallenberg Hall?



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Webster Rear-Projection Digital Whiteboards
SmartPanel Control with DVD/VCR & Laptop Connection
Video Cameras and Microphones

In-class Laptops with iSpace Collat
Wireless Networks
Videoconferencing Equipment

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Huddleboards (Portable Lightweight Whiteboards)
 2 CopyCams (Fixed Scanners to Capture Whiteboard Work)

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how this helps

Paque for 2D

- Clear grid for 3D

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Team Meeting Space Open to PublicWhiteboards and CopyCam

First Floor Breakout Spaces

### Peter Wallenberg Learning Theater

Review

3 12' Screens with iSpace ComputersFlexible Seating for up to 50

Negotiation: A Good Outcome

Than Your Alternatives (BATNA

the Best of Many Options

## Courses in Wallenberg Hall

- Classics
- History
- German
- Japanese
- Hebrew
- Mechanical Engineering
- Computer Science
- Public Policy
- Education
- Medical School
- Program in Writing and Rhetoric
- Civil and Environmental Engineering

- Science, Technology, Society
- English
- Drama
- Linguistics
- Bioinformatics
- Biochemistry
- Cultural Anthropology
- Anthropological Sciences
- Management Sci. and Engineering
- Communications
- Biological Sciences



# What are people doing in Wallenberg Hall?



## Collaborating



Vebster

## Guiding

# Evidence in microbes?

Comparative approach: Plant pathogens, soil bacteria, and other microbes tend to group into "r" or "K" types.

(Andrews 1989, Stevenson&Schmidt 2004) Experimental approach: E. coli maintained in "r" or "K" type environments. Trade-off present" Presenting

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Count off into fours please
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### Arguing

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### Experimenting

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# Building

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### Communicating

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## Meeting

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# Working

### Creating



### Partnering

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## Exhibiting

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# Relaxing

# What is working well? What are we still learning?



### Key Points About Learning in Wallenberg Hall Classrooms

- Rationale must be clear to students and faculty: Why are we here?
- Space is a tool that can be leveraged or ignored: good teaching can become great; bad teaching can become worse
- Innovation in teaching practice is best done incrementally
  - Just try one new thing in your course per term
  - Leave one free hour in your schedule to pursue 'organic' ideas



### Assessment and Evaluation:

"We're interested in different things" - Dr. Vered Shemtov, Hebrew Instructor

#### **Assessment: Instructor**

- Is this student ready for a higher level class in this field? (Japanese)
- Will this student take another class in my department? (Classics)
- What do my experience and instincts tell me about teaching here? (Engr.)

#### **Evaluation: SCIL Staff**

- We've designed
  - Faculty Interviews
  - Student Surveys
  - Student Focus Groups
- Looking for Learning Gains and Usefulness of Tools
- Larger scope: across courses for longer
- Determination of merit or worth of program, includes instructor assessment



### Key Points About Design and Operations of Wallenberg Hall Classrooms

- "Build the Best Socket We Can Afford" Professor Larry Leifer, Wallenberg Hall Visionary
  - Consider flexibility beyond furniture (walls, technologies, organizations, activities) : 'Plug in' different activities to support changing needs
  - Keep Unreserved/Open breakout spaces that people can just drop into
- Empower faculty and students to operate the spaces
  - Maintain easy interfaces (not touch screens/modes)
  - Encourage them to bring in their own applications from labs/offices to classrooms
- Allow food and drink into the space
  - Build community among faculty at lunches
  - Support activities beyond classes
  - Encourage collaboration with socialization > café culture



### **Observations and Challenges**

- File management is key technical challenge for faculty and students; USB drives and Course Management System are critical
- Social relationships impact technology usage
  - Students follow faculty lead and try to meet faculty expectations
  - Faculty/Instructors learn from and listen to each other across departments
- Flexibility in curriculum is as important as flexibility of space
  - New ideas inevitably pop up
  - In some cases, faculty explore concepts deeper using multiple representations



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### Before Q/A - A Quick Activity



Turn to the person sitting next to you, and for 2 minutes share your reactions to my talk

Who Heard a Question or Comment that was interesting?

"Steal With Credit" Thanks to Peter Dourmashkin, MIT



# Thank You!

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