



CENTER FOR
IMMERSIVE AND
SIMULATION-BASED
LEARNING

STANFORD SCHOOL OF MEDICINE



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M E D I C I N E

Ending Death by PowerPoint

Changing the way we educate our students and healthcare professionals at Stanford University School of Medicine



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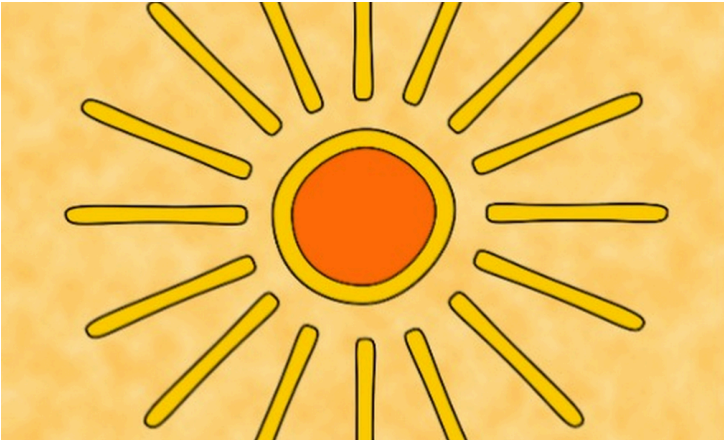
Assistant Dean

Center for Immersive and Simulation-based
Learning

Stanford University School of Medicine

<http://cisl.stanford.edu>

Thank You!



A very warm and sunny welcome from California
to our MEC 2015 hosts and particularly
Professor Heli Ruokamo

Objectives

- Discuss traditional methods and techniques used to educate medical students and demonstrate how we are redesigning medical school curriculum to make it more engaging for the students.
- Review why lifelong learning in medicine is important and discuss some traditional techniques used for this more advanced learner population.
- Describe and illustrate how we utilize immersive and simulation-based techniques (not just technology) for all learner populations in healthcare.



Disclaimer: Even if you do not teach medical students or medical (healthcare) providers, many of these concepts and ideas are applicable to all teaching and learning.





Our Early Learners

Medical Students

NOTE: At Stanford we do not have a nursing school, pharmacy school, or other schools to educate and train early learners in healthcare.



The Traditional Way Medical Students Learn

- Little has changed over the last 100 years
- Reading textbooks
- Attending lectures
- Dissecting cadavers
- Memorizing facts
- Taking tests





What did we try?



We tried to think differently...
We tried experimentation....
Some ideas worked and other did not.....

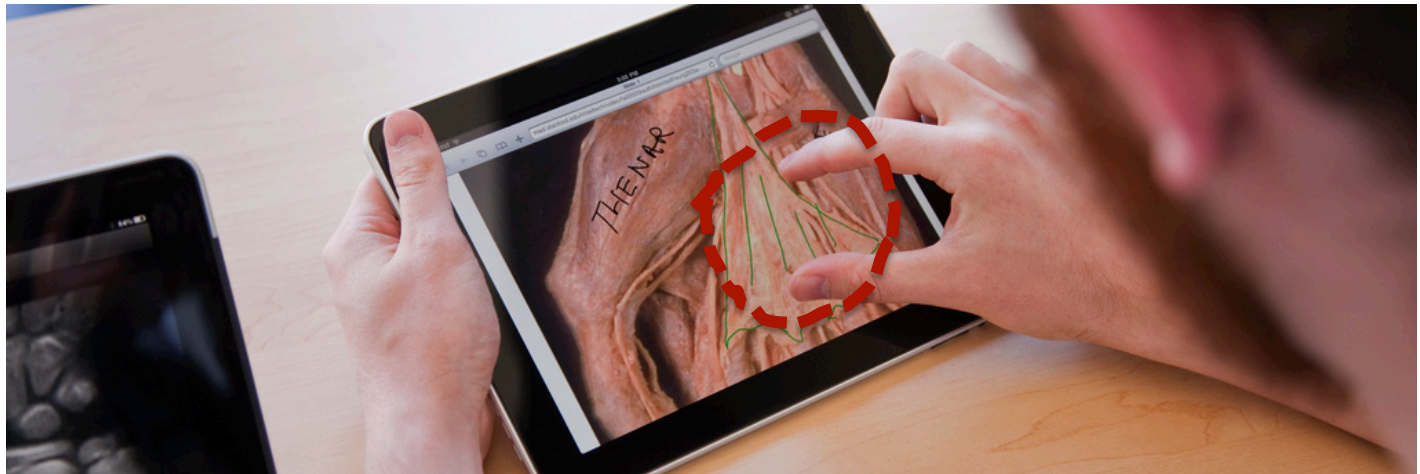
All incoming medical students received iPads

The Goal

- Use the power of technology and iPad flexibility
- Quickly access information
- Go “green”

The Result

- Decreased syllabus printing – achieved the “green” result
- Absence of a keyboard drove use away from iPads back to laptops

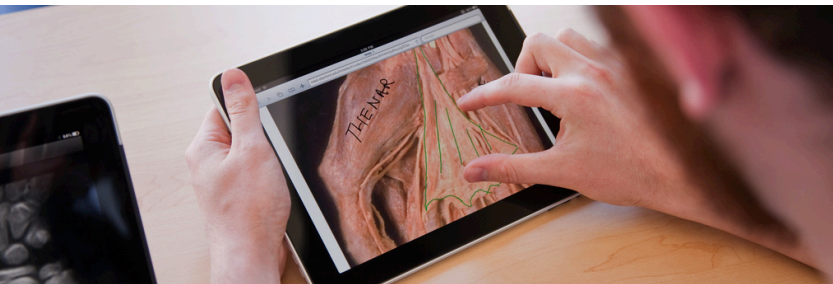


Next: Combining techniques & technologies (2012 to present)

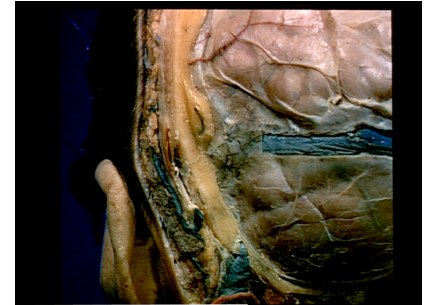


Cadaver Torso

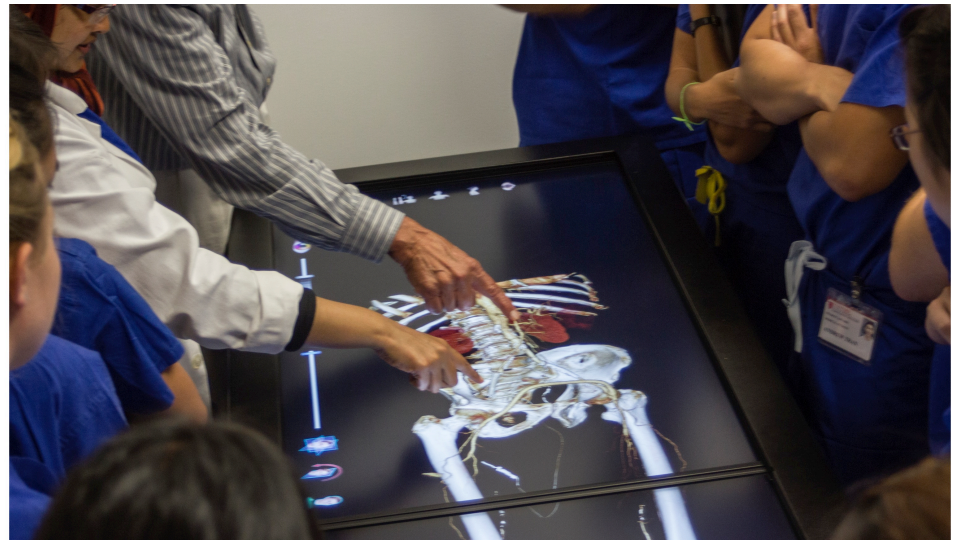
<http://lane.stanford.edu/bassett/index.html>



High quality
images



Virtual Dissection Table



2013- 2014: we decided to..... flip the classroom



The Challenge

Cheaper and easier to give a Power Point presentation with a larger group

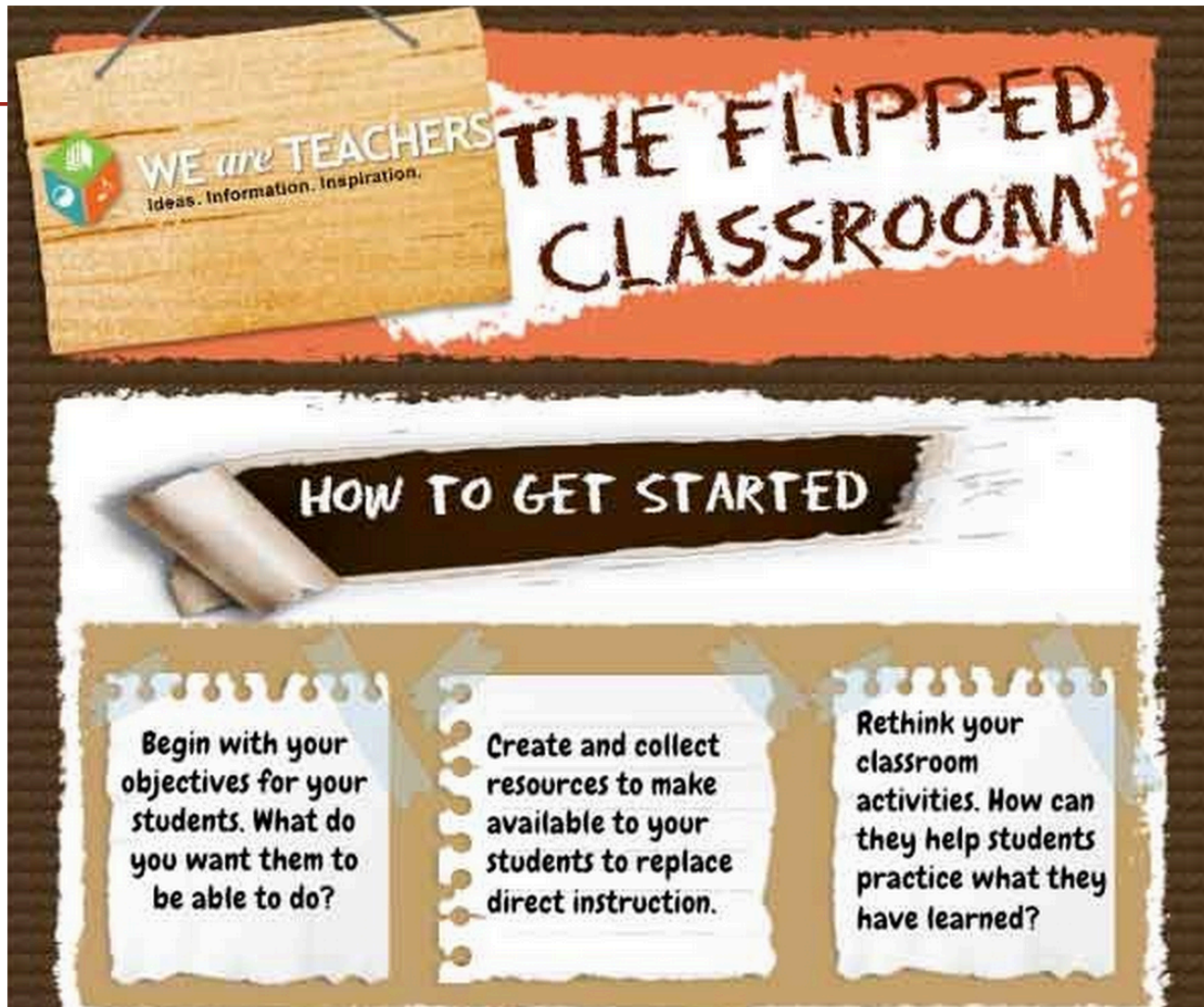


More labor intensive and harder work for the faculty with a smaller group



BUT WHAT IS THE BETTER WAY FOR THE LEARNER???





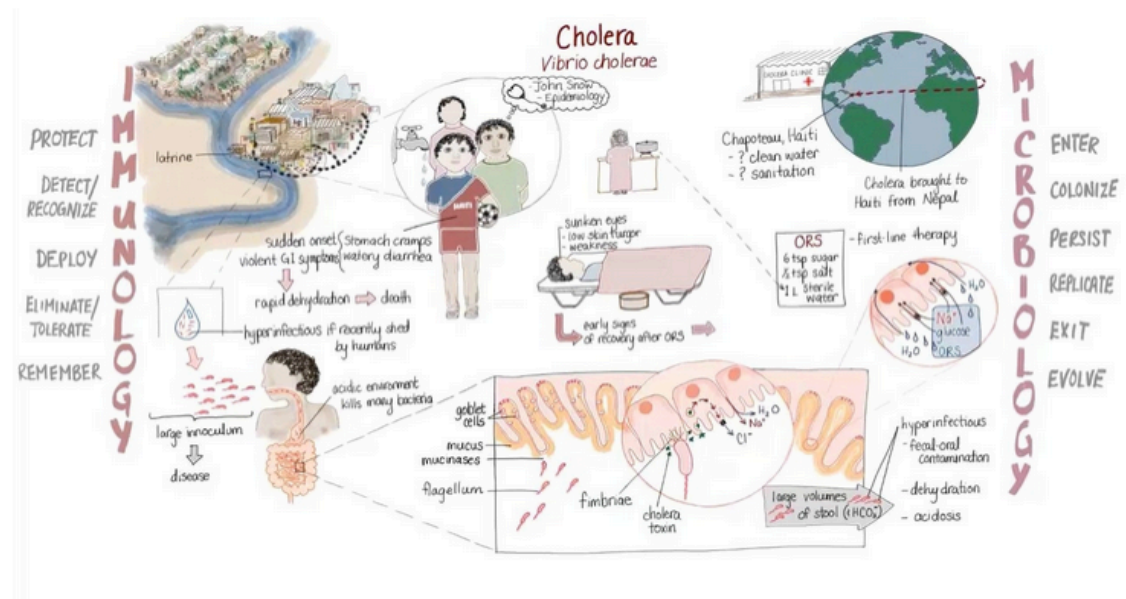
“Teachers would be able to actually teach, rather than merely make speeches”

Charles Prober (Sr. Associate Dean for Medical Education at Stanford) & **Chip Heath** (NY Times best selling author “Made to Stick”, “Decisive”, etc.)

Prober, CC & Heath, C. Lecture halls without lectures--a proposal for medical education. The New England Journal of Medicine, 2012 vol:366 iss:18 pg:1657 -1659.

TODAY: The 21st Century Medical School and the “Flipped” Classroom

- Stanford and 4 medical schools are **working together to package basic medical school content in online form**, creating richer pedagogical experiences for students that better equip them with critical thinking skills truly required for good doctoring.



http://www.rwjf.org/en/culture-of-health/2014/09/the_21st_centurymed.html

A Richer Learning Experience

The goal is to use more of the time for 1:1 or small group discussion and bring together the foundation learning from basic science (including anatomy and physiology) and how it applies to caring for the patient.

1:1 with Faculty



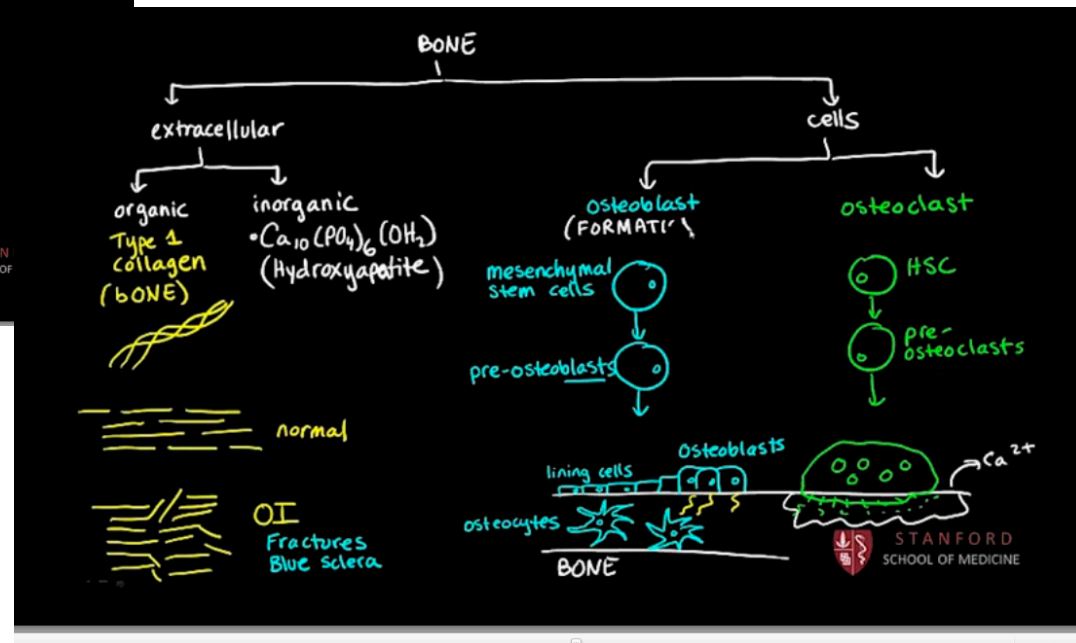
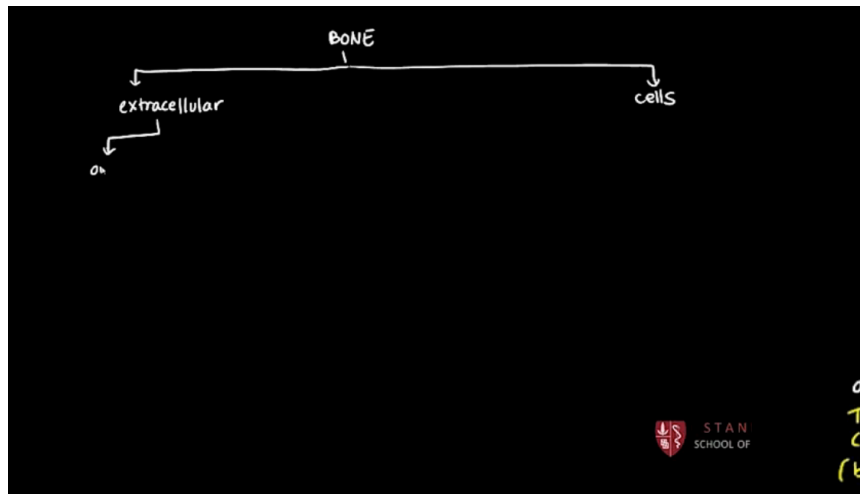
Students in Group Discussion



Early flipped classroom development was based on the Khan Academy work



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<https://www.khanacademy.org/>



The results are still not
conclusive, but promising



**It's Fun to
Learn!**

More Advanced Learners

Resident Physicians (physicians in
training – post medical school)
Practicing Physicians
Practicing Nurses
Practicing Allied Health Providers

Learning in Medicine Must be Lifelong



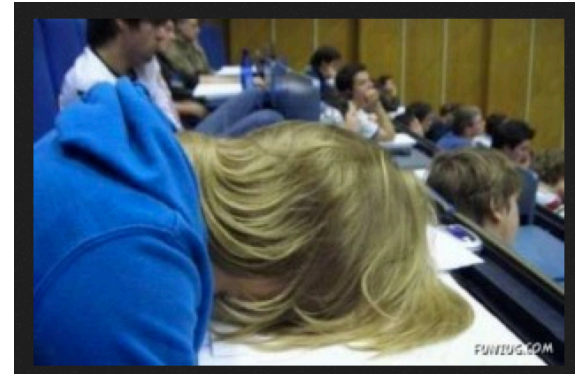
I will discuss how we educate and train a variety of healthcare providers (doctors, nurses, etc.) throughout their careers.

- Simply... *Your life depends on it!*



Traditional learning techniques

- For Resident Physicians (physicians in training post medical school).
 - See one, do one, teach one
 - Socratic method for “rounding”
 - Sitting in lectures in darkened rooms while sleep deprived



Traditional learning techniques

- For practicing physicians
 - “Continuing Medical Education” (CME) required for licensure
 - Lectures in resort locations never attended
 - “Grand Rounds” with PowerPoint presentations by experts in a field
 - Specialty Society Conferences



Traditional learning techniques

- For practicing nurses and other allied health providers
 - Continuing education units (CEUs) to maintain licensure
 - Conferences with PowerPoint presentations
 - Skills fairs



Increasing the Intensity of Learning

- As the medical learner progresses in his/her profession, we provide **more immersive techniques** that challenge their thinking and interaction with the environment.



$$B=f(P,E)$$

Behavior = function (Person & Environment)

Adapted from: Dieckman, P. *State of the Art Feedback*, IMSH 2013

Common Craft Style – a video technique of using simple cutouts to make very short videos to help make ideas easy to learn and understand. (less than 5 minutes long)



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www.commoncraft.com

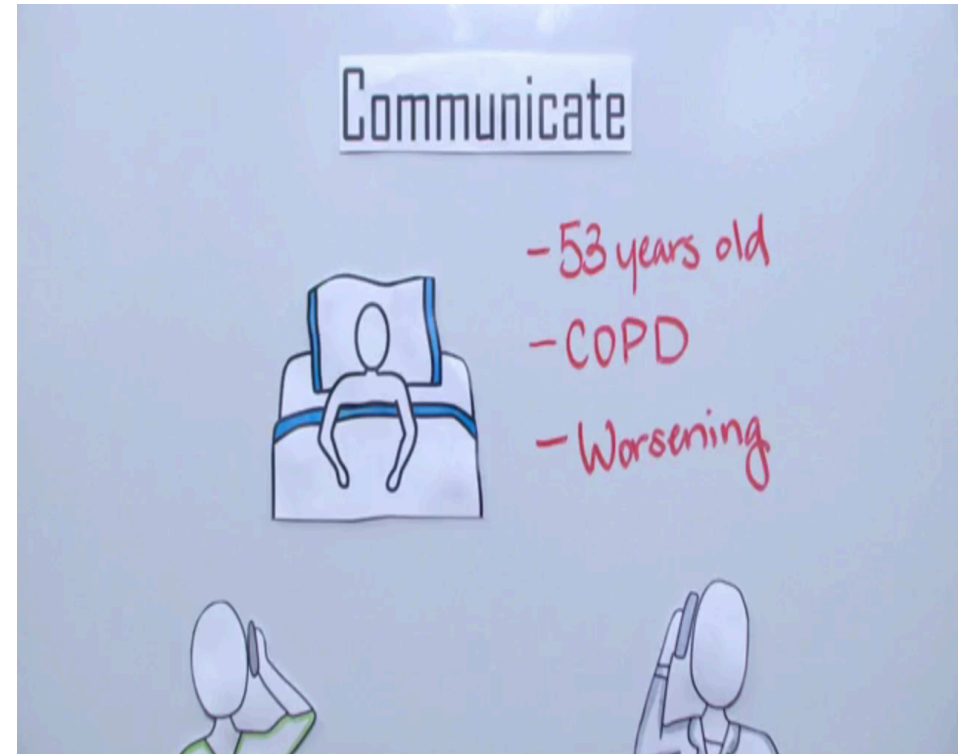


Image from a video that we developed to teach physicians how to give and receive information about a patient, the “consultation”.

Practicing suturing on
a chicken breast



Practicing injections
using oranges



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Practicing Tasks

“the Person”

Behavior = f (Person + Environment)



Practicing surgical techniques



Practicing physical exams on actors
playing the role of patients

10,000 Hours of Practice

It's not practice that makes perfect

- It is rather **perfect** practice makes perfect... or at least closer to perfect



Gladwell, M. *Outliers: The story of success*, 2011

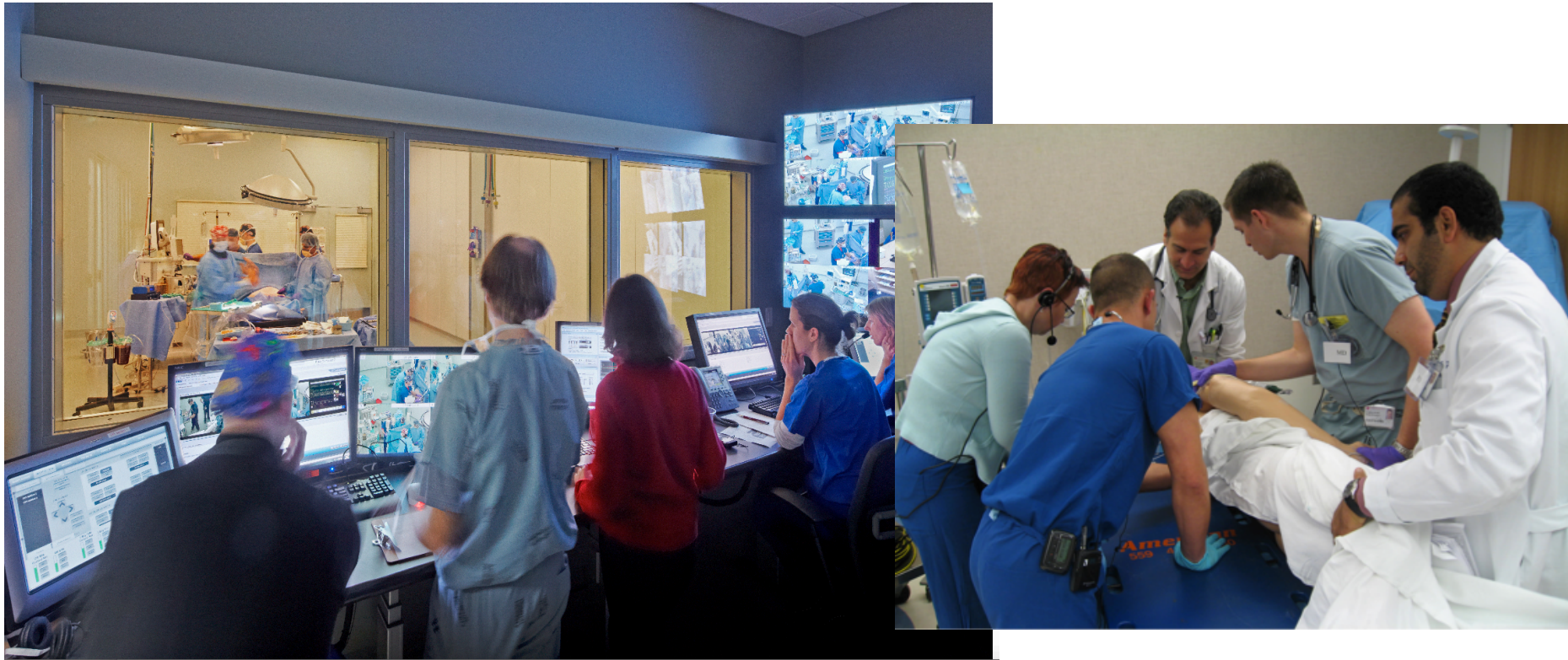
The Warriors WON the NBA Championship! Thanks to Steph Curry!



The Environment: Mannequin-based Simulation

We create the scenario and the “environment”

Behavior = f (Person + **Environment**)



“Feels real”, thus participants “act real”



Teaching and Doing

Teaching Rehabilitation Medicine Staff how to get a patient out of the bed with lots of tubes and wires. Taught by and “played” by the Senior Educator.

- Ability to discuss, how did the staff member feel about doing this task?
- How was it perceived by the person playing the role of the patient?



Working with Teams – Getting Closer to the “Behaviors”

We introduce complex challenges and complex team interactions

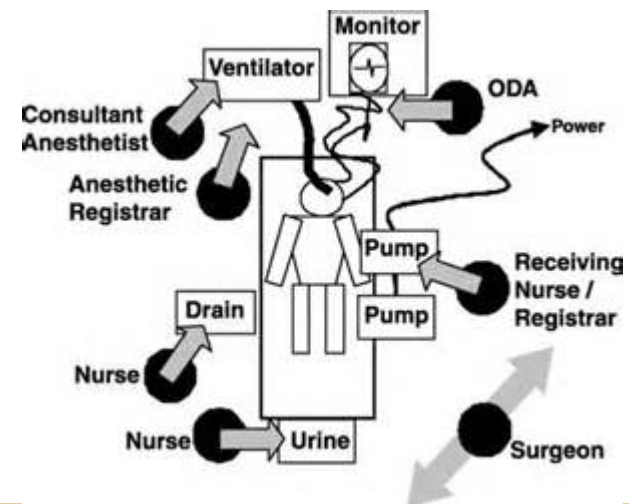


Ferrari pit stop saves Alexander's life

The Telegraph, August 29, 2006

- **OUR END GOAL:** Seamless Patient Care with Optimal Communication
- Physicians and administrators from London's Great Ormond Street Hospital for Children redesigned many of their surgical procedures by studying how Ferrari's Formula One racing team handled pit stops.

Behavior = function (Person & Environment)



Learning about our own behaviors

Patient actor playing the role of a mother with a sick child and who may be a victim of possible domestic abuse. Question: can the provider get the correct information from the mother, how do they deal with their own personal biases, and finally how do they provide optimal care for both the mother and child.



*—practice and
reflect*

**In the spirit of Steve Jobs:
The world is changing quickly and we need to think
beyond the traditional.**



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You're not going to learn faster (or deeper) than everyone else if you seek inspiration from the same sources as everyone else. **Educators know that we learn the most when we encounter people, experiences, and ideas that are the least like us.** And yet, we spend most of our time with people and in places that are the most like us — our old colleagues, our familiar offices, our reassuring neighborhoods. **If you want to learn faster, look and live more broadly.**

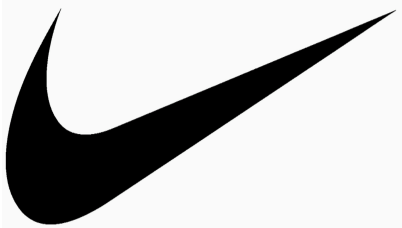
- Translation from a documentary about Steve Jobs and how he learned from those outside.

Taylor, B. Are You Learning as Fast as the World is Changing, Harvard Business Review, Jan 26, 2012



We, at Stanford are attempting to look beyond and utilize various techniques to enhance the learning experience for all of our learners... young and old. Sometimes we will be successful, and sometimes we will not, but we must keep trying.

As they say at Nike... Just do it!





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