The Department of Learning Health Sciences

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Skating to Where the Puck is Going to Be

Wayne Gretzky
In this Spirit,

The UMMS Department of Medical Education

has evolved into a first-in-the-nation Department of Learning Health Sciences
Learning

- Learning is a process of continuous data-directed self-examination and change, leading to improvement.
- Learning occurs at different levels of scale:
  - Individual
  - Group
  - Organization
  - Ultra-large scale
Our ‘Human Genome Project’: The Learning Health System

Where learning meets health. Health systems—at any level of scale—become learning systems when they can continuously study and improve themselves.

The NEW ENGLAND JOURNAL of MEDICINE
Perspective: Jan 3, 2013
“Code Red and Blue — Safely Limiting Health Care’s GDP Footprint”
Arnold Milstein, M.D., M.P.H.

...U.S. health care needs to adopt new work methods, outlined in the Institute of Medicine’s vision for a learning health system...

Reduce Bench to Bedside Latency:
17 Years to 17 Months to 17 Weeks to 17 Days to 17 Hours
Our ‘Double Helix’: The Learning Cycle

A Problem of Interest

- Decision to Study
- Take Action to Change Practice
- Deliver Tailored Message
- Interpret Results

- Assemble Relevant Data
- Analyze Data
- Take Action to Change Practice
- Deliver Tailored Message
Learning Science

• The knowledge that makes continuous learning: effective, sustainable, routine, and scalable
• Closely related to the science of ‘cyber-social ecosystems’
• The knowledge that enables platforms to support learning

Semantics, Knowledge Representation and Management

Data Science
Machine Learning & Analytics

Complexity & System Science
Economics
Policy Science

Decision Science
Communication and Behavior Change
Implementation Science
Learning Science Enables Platforms

• Without a platform, each learning cycle develops its own, sub-optimal methods for learning; no economy of scale

• With a platform, all cycles share & benefit from a common infrastructure; costs are distributed
Funding Agencies are taking notice. A national community is emerging.

Toward a science of learning systems: a research agenda for the high-functioning Learning Health System

Charles Friedman,¹ Joshua Rubin,¹ Jeffrey Brown,² Melinda Buntin,³ Milton Corn,⁴ Lynn Etheredge,⁵ Carl Gunter,⁶ Mark Musen,⁷ Richard Platt,² William Stead,³ Kevin Sullivan,⁸ Douglas Van Houweling¹


Patient-Centered Outcomes Research Institute

Robert Wood Johnson Foundation
Accordingly…

• The evolved Department of Learning Health Sciences is a basic science department focused on the science of learning, applied to health, at all levels of scale

• This includes, but transcends the department’s former mission that was focused on medical education

• We’re getting there the “fustest with the mostest”.
“DLHS” Departmental Mission

• **Research:** Generate and communicate new knowledge that advances the science of learning applied to health
  – *New Scientific Journal*

• **Education:** Prepare a next generation of learning scientists; fold learning science into health professional curricula
  – *New PhD program*

• **Service:** Promote learning and learning systems at all levels of scale
Department Organization

• *(New)* Division of Learning and Knowledge Systems: Learning at the organizational level and at ultra-large scale
  – Recruiting six new faculty members
• Division of Professional Education: Learning by individuals and groups
• Clinical Simulation Center: Developing and deploying technology to advance learning
Reaching Across the University
A “Legion” of 80+ UM Collaborators

LEARNING SYSTEM

UM as the Engine of a Global “Learning System” to Transform Health

There is no greater global challenge than improving the health of individuals and populations. Nations around the world—including of course our own—are plagued by rising health costs, inconsistent safety and outcomes, a persistent latency between best practice knowledge and its actual application in health maintenance and health care, and an inefficient public health and biomedical research infrastructure. In the face of this challenge, there is increasing recognition that improved individual and population health can be catalyzed by a Learning Health System (LHS) working at national scale and capitalizing on the increasing amount of health data accessible in digital form. The LHS is effectively a Smart Grid for health, a multi-stakeholder federation that enables continuous access to data relevant to any specific health problem from entities across the nation, conduit of analytics converting raw data to useful knowledge, and transmission of that knowledge to all stakeholders in formats that promote positive action and health-promoting behavioral change. In this way, the LHS enables a continuously and rapidly operating virtuous cycle of health improvement through study, feedback, and change.
Let’s Talk Some More

• Write to me: cpfried@umich.edu
• Our website: LHS.medicine.umich.edu
• We’re in the Victor Vaughn Building but I also make house calls