Elevating WPI’s Impact and Value: Ideas from Strategic Planning

Laurie Leshin, President
Presentation to WPI Community
April 13, 2015
Overall Strategic Planning Timeline/Process

- **June-Nov ‘14**: Retreats, listening sessions, faculty lunches, pillar topics announced
- **Nov ‘14-Feb ‘15**: Pillar Team work; presentation to Board
- **March-May ‘15**: Integration work; re-engage Faculty, Board, Staff, Students, Alumni
- **Summer ‘15**: Refine plans, begin early phase/pilot implementation, prepare written document
- **Fall ‘15**: Strategic plan finalized, implementation
Reminders

• “Pillars” for initial set of discussions derived through significant engagement, especially with faculty and trustees

• Balance challenge 1: Plan is both big enough and right-sized for action over the next 3-5 years

• Balance challenge 2: Teams and process are both inclusive and manageable:
  • >90 total team members
  • 58 hold academic appointments
  • 37 “non-administrative” faculty
  • 21 currently a part of Faculty Governance
  • 4 Trustees
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<th>Pillar Team Participants: THANK YOU!</th>
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Strategic Planning Pillars

1. Expand **Global** Reach and Impact
2. Elevate **Distinctive Undergraduate Programs** to New Levels of Excellence and Value
3. Strengthen **Research Enterprise and PhD Programs**
4. Create Innovative **Online Graduate & Continuing Education Programs**
5. Build an Engine of **Innovation & Entrepreneurship**
6. Enhance our **Capacity** to Deliver on the WPI promise

Today you’ll see a high level integrated summary including some highlights from individual pillar presentations, and ideas about **next steps** (not detailed implementation plans)
Retreats, Listening Sessions

1. Global
2. UG
3. Research PhD
4. Online
5. I&E
6. Capacity

Initial Proposals

Integrated Core Concepts

- Undergrad Ed
- Grad Ed & Research
- Reputation/Viz

- More in Four
- Global Projects
- Roots of the Plan

- Major & Mission
- PhD Plan
- On-line flexible MS
- Institute for PBL
- Elevate Partnerships

- Research Themes
- I & E Center/FIS
More in Four Global Projects Major & Mission Roots of the Plan

Elevate Partner- ships Institute for PBL Elevate Partnerships

PhD Plan On-line flexible MS Research Themes

I & E Center/FIS

Retreats, Listening Sessions

Global UG Research PhD Online I&E Capacity

Initial Proposals

Integrated Core Concepts

Undergrad Ed Grad Ed & Research Reputation/Viz
Double-down on Distinctive Undergraduate Education:

• Expand the quantity and impact of Global Projects

• **Major and a Mission**: Create more intentionality, mindset (global, entrepreneurial), integration in work beyond the major

• Focus on increased value for students and families, doing **More in Four**

• Return to the **Roots of the WPI Plan** through flexible, student-centric education
Setting the Stage: Courses and Projects

38 Required Courses

3 Required Projects

Opportunities:
- Increase flexibility/personalize
- Leverage technology
- Infuse additional competencies
- Enable acceleration

Opportunities:
- More off campus
- Increase connection
- Deeper reflection
- Greater impact
Global Projects

Expand number and document impact of global projects

- Reduce barriers to participation in off-campus projects with a goal to increase participation to over 90%
- Demonstrate and elevate the impact of our projects on the communities they serve
- Connect to broader global competency
Major and a Mission:

Enable students to find and pursue passion/interests and enhance capacity to translate theory → practice → impact
By contextualizing coursework and other activities

Example focus areas:
• Grand Challenge Scholars
• Entrepreneurial Mindset
• Global Competency
I & E @ WPI: Focus on Impact

Through curricular & co-curricular opportunities:

• Instill **courage, confidence and curiosity** in students

• Cultivate inquisitive minds that pursue **innovative ideas** with tangible impacts

• Help students identify, assess and execute on the **best opportunities**

• Learn how to **bring impactful solutions** to individuals, communities and markets
More in Four:

Lower the cost of a WPI education to students & families

• Leverage AP credit
• Create paths to accelerated (4 year!) Masters degree
• Increase use of summer: On campus, on-line, & projects
• Opportunities for Professional Practicum (w/earnings)
Roots of the Plan:

Focus on competency and leverage technology to increase the flexibility, efficiency, and impact of the undergraduate program.

• Leverage additional flexibility created to maximize deep, integrated learning through time spent in groups, in classrooms, and with faculty

• Could be especially powerful in the first year
Roots of the Plan:

Identify the Key Ideas and Skills:

- Separable DEs
- 1st order models
- 2nd-order linear DEs
- Laplace Transforms
- Systems
- Diff Eq Capstone Project

Require mastery of all, but not necessarily on the same 7-week schedule; Personalize the path and support.
Undergraduate Education: Next Steps

• Conceptualize and begin to offer some “Major and a Mission” options: entrepreneurial mindset, global competency, and 1-2 grand challenges (e.g. energy, security, global health)

• Develop and publicize options for More in Four

• Expand summer offerings (especially IQP’s) and off-campus project options

• Pick two introductory undergrad classes to pilot for a group of students in the fully-flipped, competency-based approach
✓ Elevate Graduate Education and Research

• Enable critically important research where we can have impact

• Implement a WPI PhD Plan to elevate PhD programs

• Pilot a new, highly flexible approach to online MS education (with ripple effects in UG curriculum, too)
Broad Research Themes build upon strength & opportunity:

- Health & Biotechnology
- Robotics & Cyberphysical Systems
- Advanced (Sustainable?) Materials, Manufacturing & Mobility
- Cyber, Data & Security Science & Engineering
- Learning Sciences & Technology
IMAGINE A WORLD

Health & Biotechnology

- Wearable sensors
- Medical devices
- Imaging
- Surgical systems
- Home care
- Rehab
- Sensors & apps
- Neuroprosthetics
- Biomaterials
- Regenerative Medicine
- Infection & disease
- Neurodegenerative disease

Graduate Education & Research
Health and Biotechnology

US Strategic Priority

- 2013 healthcare expenditures: $2.9 Trillion
- Coverage expansion & aging population drive faster growth in health spending
- Age 65+: 13% of population, 34% of spending
- Increased antibiotic resistance; call for “precision medicine” disease response

Advancing Scientific Knowledge and Innovation
- Promote Global Health Security
- Combat Antibiotic Resistance
- Protect from Healthcare-Associated Infections
- Advance Biomedical Research
- BRAIN Initiative
- Big Data
- Improve Healthcare via Health IT

Health: Translational Biomedical Science, Systems, and Engineering

Delivery of Care
- Assistive Technologies
- Interventional Technologies
- Systems & Data

Biomanufacturing & Biofabrication
- Biomaterials
- Regenerative Medicine
- Neuroprosthetics

Foundation of Disease
- Infection & Disease
- Neurodegenerative Disease
- Cancer

Cross-cutting themes: Improving Patient-specific Health, Improving Global Healthcare

Technologies: Robotics and automation; Biosensing technology; Cyber-physical systems; Wireless & security; Apps; Biofabrication; Systems dynamics; Modeling of healthcare and biological systems; Bioinformatics, EHRs, Big data analytics

Bioengineering Institute, Healthcare Delivery Institute, Biomanufacturing E & T Center
The WPI PhD Plan: Conceptual Model

Research
-creation of new knowledge-

Impact

Professional

Training

Communication
Pedagogy
Ethics
Innovation & Entrepreneurship
Conflict resolution
Career planning
Time management
Work-life balance
Mentoring

Poster presentations
Conference presentations
Conference publications
Journal publications
Grant writing

Industry co-op
Teaching experience
International experience
Project center intern
Clinical experience
Interdisciplinary experience
Patent application
Pilot a highly flexible approach to online ed

- 27% of our graduate credit hours are delivered online or blended
- Apply the values of the WPI Plan (student-centric, flexible) to create innovative online approach to graduate degree, certificate, etc.
- Dovetails well with the “roots of the plan” ideas
- Proposal most disruptive to current paradigm (teaching assignments, financial model, technology needs) and so needs deep thinking/planning
Student Centric Paradigm

Courses when wanted

Evaluations when ready

As many chances as needed

Help always available

Learn what you want

Grades that capture success

Taught by the best

Graduate Education & Research
Competency-based & Gamified

- Modules are stand-alone topical units with an evaluation
- Capstone modules can integrate several modules
- Any module may be reviewed and evaluation retaken at any time
Optimizes Student Flexibility and Efficiency

On Ramp → Course → Course → Course → Certificate or Program Capstone

Graduate Education & Research
Graduate Ed & Research: Next Steps

• Develop initial focus areas within research themes
• Plan to develop & strengthen Centers and Institutes
• Reinvest research income strategically into the research & PhD programs
• Recommend cluster hiring in theme areas
• Enable self-organizing transdisciplinary research groups
• Create integrative PhD Plan Programs beyond the thesis
• Fully develop plan for platform, financial model, faculty support model, etc for new online approach
• Choose one graduate level program for phased online pilot
More in Four Global Projects
Major & Mission Roots of the Plan

Elevate Partnerships
Institute for PBL

Online PhD Plan On-line flexible MS Research Themes

Capacity I & E Center/FIS

Undergrad Ed Grad Ed & Research Reputation/Viz

Initial Proposals

Integrated Core Concepts

Global UG Research PhD Online I&E Capacity

Retreats, Listening Sessions

1 2 3 4 5 6
✓ Enhance WPI’s Reputation and Visibility

• Claim leadership in project-based, globally-engaged education

• Be more intentional, strategic and collaborative in global endeavors and partnerships

• Leverage the new Foisie Innovation Studio to house and highlight our distinctive educational activities, including new ideas emerging from planning
Claim leadership in project-based, globally-engaged education: Institute for Project-Based Learning

- Affiliated faculty: Expertise embedded in departments
- Visiting scholars: Bringing new ideas, spreading the word
- Support: Marketing, Fundraising

- Library
  - ATC
  - Student Life

- Morgan Teaching and Learning Center

- Workshops and Institutes at WPI
- Customized workshops offered globally
- Consultation services for colleges and universities
- Mentoring and development for WPI faculty
- Research, publications, grant proposals, dissemination of best practices

WPI visibility and reputation enhanced
- More visibility/recognition = more interest from potential partners
- More visibility/recognition = more interest from top-tier faculty

Project-based learning is more pervasive
- More project-based learning in the world = more impact on students
- More project-based learning in the world = more community impact worldwide
Be more intentional, strategic and collaborative in global endeavors

**Reputation & Visibility**

**Central America**
- Strong and well-placed alumni base
- Unique opportunity through Panama Canal MOP center
- IOP center
- High-level strategic partners
- University partnership: Technological University of Panama

**Europe**
- Alumni clusters throughout region
- 6 IOP centers
- 4 MOP centers
- 150 students travelling there next year
- Strong Academic Partnerships in 8 countries

**China**
- Strong alumni base
- 4 Project centers
- 6 university partners
- 20 corporate partners
- Significant fundraising potential

**Project Centers**
- Institutions/Universities
- Corporate Partners
- Alumni
- Major Prospects
Leverage the new Foisie Innovation Studio to highlight our distinctive educational activities.

New Concepts:
• I&E Center
• Global Impact Lab
Reputation and Visibility: Next Steps

• Plan and launch permanent Institute for Project Based Learning

• Appoint leads/teams and develop strategies for targeted geographic areas

• Flesh out operating concepts and early activities for I&E Center and Global Impact Lab
Next Steps for April Engagement

• Provide initial impressions today
• Let the ideas settle a bit and then attend a “Strategy Cafe” at the Goat’s Head for deeper conversations

For Faculty:
4/21, 2:00 – 3:30 PM: Undergraduate Ed
4/22, 3:00 – 4:30 PM: Graduate Ed & Research
4/29, 9:00 – 10:30 AM: Visibility/Reputation

For All:
4/24, 1:00 – 2:30 PM: Undergraduate Ed
4/24, 3:00 – 4:30 PM: Graduate Ed & Research
4/30, 9:30 – 11:00 AM: Visibility/Reputation
Closing Thoughts

These ideas emerged from our community and I am thrilled to represent them.

They are more driven by opportunity than threat: Our innovations are self-motivated.

There is more work ahead, but we’re on an exciting path to build upon WPI’s tradition of innovation in higher education.
THANK YOU!