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

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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

Introduction
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
Pillar Team Participants: THANK YOU!

Jo-Ann Alessandrini  Tanja Dominko  Frank Hoy  Michael McGrade  David Spanagel
Diran Apelian  James Doyle  Germano Iannacchione  Melissa Mobley  Diane Strong
Mike Aspinwall  Jim Duckworth  Hajar Jafferji  Amy Morton  John Sullivan
Jon Bartelson  Joe Duffy  Scott Jiusto  Karen Oates  Kris Sullivan
Jim Baum  Tahar El-Korchi  Bob Kinicki  Anne Ogilvie  Steve Taylor
Karen Bean  Greg Fischer  Steve Kmiotek  Eric Overström  Kristin Tichenor
Joseph Beck  Stephen Flavin  Steve Koppi  Taskin Padir  Judi Trainor
Kris Billiar  Tom Gannon  Rob Krueger  Stephanie Pasha  Rick Vaz
Kristin Boudreau  Nikolaos Gatsonis  Susan Landau  George Pins  Bogdan Vernescu
Nancy Burnham  Glenn Gaudette  Rachel LeBlanc  Reeta Prusty Rao  Craig Wills
Terri Camesano  Mike Gennert  Cindy Lindberg  Mark Rice  Kris Wobbe
Luca Capogna  Arne Gericke  Rob Lindeman  Mark Richman  Sharon Wulf
Philip Clay  Karen Goudey  Eleanor Loiacano  Jennifer Rudolph  Alex Wyglinski
Jen Cluett  Peter Hansen  Francesca Maltese  Elke Rundensteiner  Jamal Yagoobi
Dave Cyganski  Dana Harmon  Tony Mangano  Liz Ryder  Amy Zeng
Maureen Deiana  Mary Beth Harrity  VJ Manzo  Deborah Scott  
Chrys Demetry  Tracy Hassett  Bob Martin  Craig Shue  
Dave DiBiasio  George Heineman  Yehia Massoud  Greg Snoddy  
Fred DiMauro  Art Heinricher  Bill McAvoy  Jeff Solomon  

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

Global

UG

Research PhD

Online

I&E

Capacity

Initial Proposals

Integrated Core Concepts

More in Four

Global Projects

Major & Mission

Roots of the Plan

PhD Plan

On-line flexible MS

Research Themes

Institute for PBL

Elevate Partnerships

I & E Center/FIS

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:
- More off campus
- Increase connection
- Deeper reflection
- Greater impact

Opportunities:
- Increase flexibility/personalize
- Leverage technology
- Infuse additional competencies
- Enable acceleration
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
Enable students to find and pursue passion/interests and enhance capacity to translate theory $\rightarrow$ practice $\rightarrow$ 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:

- 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)

Lower the cost of a WPI education to students & families
The Plan

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
- 2nd-order linear DEs
- 1st order models
- 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
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

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

HHS Initiatives and Priorities (2015)

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
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
- 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
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

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Initial Proposals

Retreats, Listening Sessions
✓ 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**: Workshops and Institutes at WPI
- **Customized workshops offered globally**: Consultation services for colleges and universities
- **Morgan Teaching and Learning Center**: 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

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

Europe
- Alumni clusters throughout region
- 6 MQP centers
- 4 MQP 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

Milano, Italy. Glenn Gaudette visits Politecnica di Milano for work on cell growth and tissue engineering.
Leverage the new Foisie Innovation Studio to highlight our distinctive educational activities.
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!