Big Move- Purdue Polytechnic Institute Update
Opening our College to the Future

April 4, 2014
Board of Trustees Meeting
Gary R. Bertoline, Dean & Distinguished Professor
Fatma Mili, CIT Department Head
Jamie Mohler, Associate Dean
Ragu Athinarayanan, TLI Department Head

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Students first in all we do.

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The Polytechnic Initiative

- A bold Big Move to reposition the College of Technology as a national leader in technology education and application-oriented research.
- The Polytechnic is a virtual unit parallel to the College of Technology used as an accelerator for transformational change.
- There are multiple initiatives currently underway all leading to the overall goal to change the face of technology education in the nation and bring distinction to Purdue University.
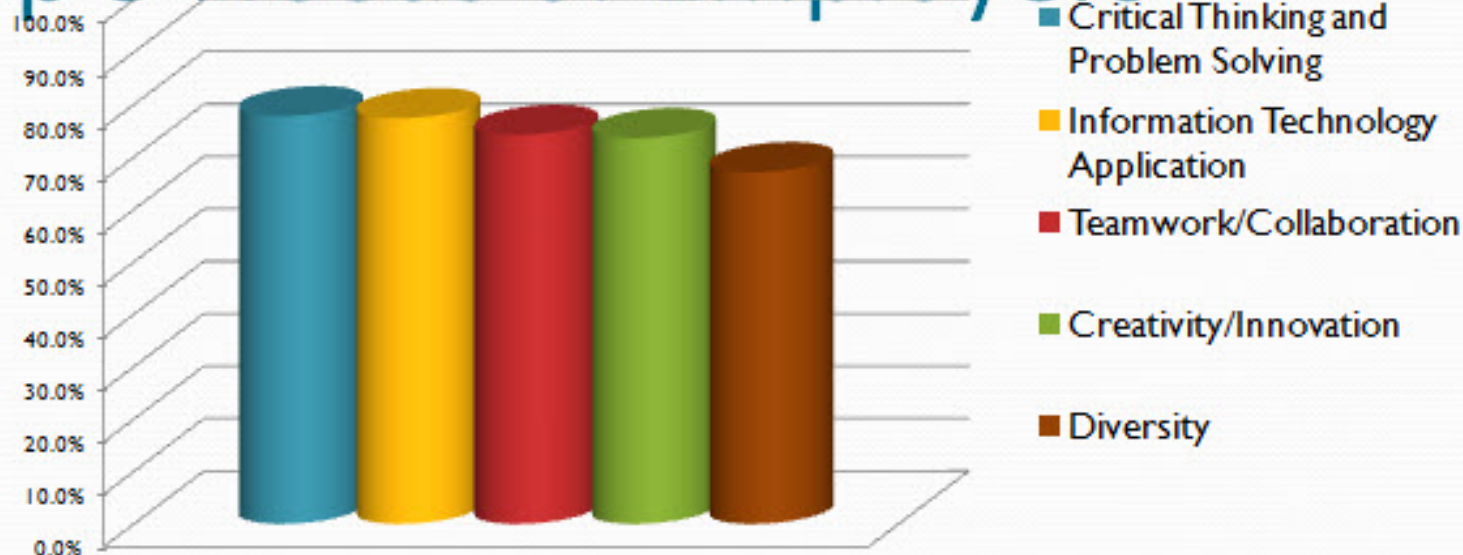
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The world has changed

WHAT THE ECONOMY OF TODAY AND TOMORROW DEMANDS

- **Ability to ask good**
- **questions,**
- **Thinking and analytical**
- **skills to seek answers**
- **Information**
- **Literacy**
- **Collaboration &**
- **Communication**
- **Civil duty and**
- **sense of**
- **community**
- **Lifelong**
- **curiosity and**
- **learning**

Top 5 Needs of Employers

Legend:
- Critical Thinking and Problem Solving
- Information Technology Application
- Teamwork/Collaboration
- Creativity/Innovation
- Diversity

*Education Technology Expert **Alan November** has included **Empathy** as Number One In His Surveys*

Are They Really Ready To Work: (Employer's Perspectives on the Basic Knowledge and Applied Skills of New Entrants to the 21st Century U.S. Workforce.)

21 century edtech web site provides total ranking

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Polytechnic INSTITUTE *PURDUE*

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The students have changed

THEY COME WITH DIFFERENT MIND HABITS

- Connected, multi-taskers, digital natives
- Used to creating and sharing;
- Learning with and from others
- Informal interest-based exploration and learning
- Learning through exploration and discovery

Kids Creating Stuff Online

INSPIRING THE INNOVATORS OF THE FUTURE

New culture for students

- Students are mentored into discovering and creating a purposeful path rather than given a one size fit all plan of study.
- Students work in classroom with multi-disciplinary teams of faculty (mostly) rather than through fragmented monodisciplinary courses.
- Students learn just in time following their passion and purpose rather than just in case it comes up in the test.
- Students receive credit for demonstrating mastery rather than for seat-time served.
- Students receive credit for everything they learn however they learn it rather than only through our lectures.
- Students are trusted and respected in rather than tested and suspected.

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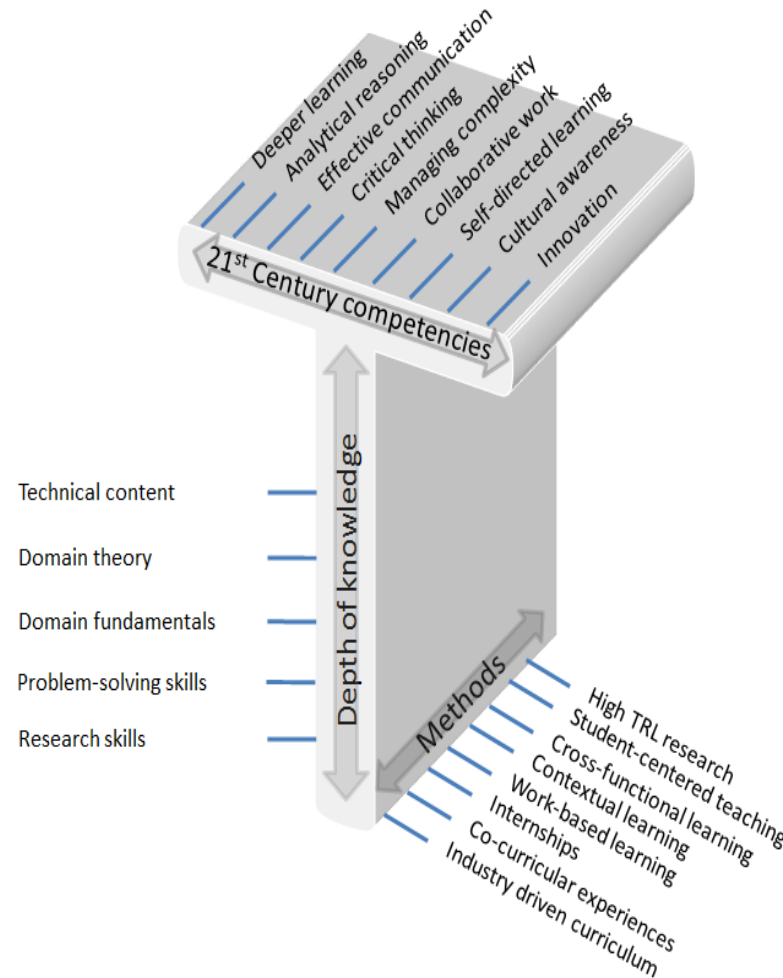
New culture for faculty

- Working with students is our highest form of scholarship rather than a routine different from scholarship.
- Faculty trust the students, nurture their passion, and follow their lead rather than be the sage on the stage.
- Faculty model openness, growth mindset, risk-taking, and lifelong learning, the same values and skills we expect from students.
- Faculty are collaborative, cooperative and reflective in their working with students.
- Faculty expect the highest standards from themselves, from each others, and from the students.

New culture for classrooms

- Classrooms are open laboratories. Faculty collaborate with each other and with the rest of the community to practice the three R's of the 21st century:

- Rigor: Students practice how to think (reason, analyze, weigh evidence, problem-solve) and communicate effectively.

- Relevance: problems addressed are relevant to the students' world and interests.

- Relationships: students' place in the world relative to their peers and to the global world are always central to what they do.

The T-shaped Professional

The Four Polytechnic Initiatives

- *Education R&D (Polytechnic Incubator)*
  - ▫ Lead- Fatma Mili & Faculty Fellows
- *Curriculum Transformation (Polytechnic Accelerator)*
  - ▫ Lead- Jamie Mohler & Faculty Fellows
- *Research & Innovation Acceleration Network*
  - ▫ Lead- Ragu Athinarayanan & Richard Voyles
- *Comprehensive Workforce Education Strategy*
  - ▫ Lead- Christy Bozic, Statewide Technology & Engagement Faculty

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Education R&D

- Established a Polytechnic Incubator for curriculum transformation.
  - ▫ The group of faculty working out of the DLRC are creating an integrated learning experience for the fall for ~50 newly admitted students from Technology and Liberal Arts
- Innovative curricula and ideas tested and validated in the incubator are transitioned to the home academic units of the faculty.
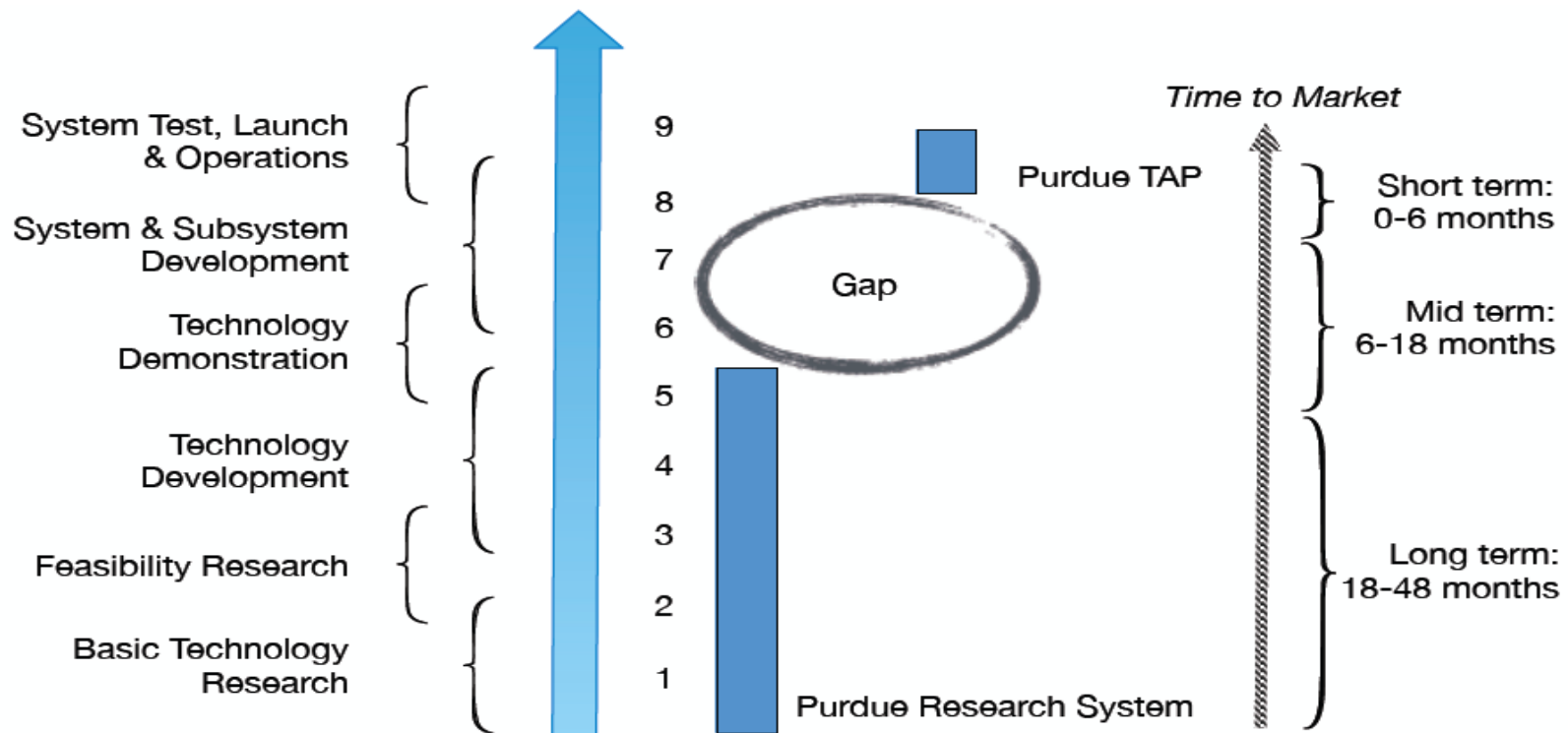
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Curriculum Transformation

- Examples of new programs under consideration:
  - ▫ Computing & Informatics
    - Human Centered Design
    - Bioinformatics
    - Cyber Security & Forensics
    - Big Data & Analytics
    - High Performance & Cloud Computing
    - Computational Art (with Liberal Arts)
  - ▫ Integrated Manufacturing Systems
  - ▫ Robotics, Automation & Mechatronics

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Curriculum Transformation

- Core curricula may include
  - Common Core & First-year Experience
  - Learn by Doing
  - Real-world Immersive Capstone Experience
  - Global Perspectives Program
  - Polytechnic Field Experience
  - Applied Innovation Certificate Program
  - Humanities Integration

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The Gap in Higher Education Research & Innovation Ecosystem

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Innovation Acceleration Network

- To address a gap in higher education research and innovation ecosystem.
- Creation of iLabs around research themes for industry aligned with Technology Readiness Levels (TRL) 4 through 7.
- Value to industry = Speed to Market
  - Provide Indiana companies with agile, low-cost pathways to innovation – new products, new markets

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College of Technology & Partners

- College of Technology
  - ▫ SoET (5), CIT (2), CGT (1), BCM (1), AT (1),
- College of Liberal Arts
  - English(1), Comm(1), Theatre & Performing Arts (1)
- College of Education (1)
- DLRC
- CIE
- IMPACT
- Honors College
- Foundations of Excellence
- Discovery Park
- Research Park

PURDUE LIBERAL ARTS

PURDUE UNIVERSITY COLLEGE OF EDUCATION

Center for Instructional Excellence

DLRC

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