The PPI Vision: Values, Beliefs, and Signature

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No student ever had his entire education ruined because of a learning innovation that didn’t come off. But I can show you plenty of students whose curiosity and imagination were strangled by being trapped in a repetitive, uninspiring, unimaginative learning enclosure.  
David Price

The Purdue Polytechnic Institute is an educational initiative aimed at creating an exemplar of the undergraduate education of the future. PPI is initiated in the College of Technology with several strategic partners within and outside Purdue. PPI is motivated by the conviction that undergraduate education has become dangerously misaligned with the needs and aspirations of the students and the demands of future economies that nothing short of a complete overhaul will make a significant difference. In this paper we articulate the values, the guiding principles, and the signature characteristics of the PPI undergraduate education.

1. The Values

We value every student as a whole person.
As an educational institution, we welcome and value every student as a whole person with emotional, cognitive, and social aspirations and needs. We feel it our duty to support our students in developing their individual talents and sensibilities, in deepening their understanding of the world, and in gaining skills to be productive in society.

We welcome students in their diversity of thinking, knowing, and learning.
For two centuries education has favored some forms of learning and knowledge over others and some paths to learning over others. We equally value convergent and divergent thinking, cognitive and embodied knowing, and theoretical and experiential learning.

We value openness.
We value complete openness in everything we do. We value sharing and collaboration through open access to all data, knowledge, and artifacts. We value the creative powers of the communities as much as those of the individuals. We have entered an era of collective and collaborative learning, production, and consumption of knowledge. We embrace openness that underlies this communal way of working.

We value access.
We value access to education to all students through the nurturing and support of all talents and sensibilities. We value access to education to all students in their diversity of preparation, experience and backgrounds.

1 Last updated on November 10th 2013.
We value students’ autonomy with their learning. Learning rather than teaching is the core of education. We believe that learning is a personal act of discovery that is best fueled by strong motivations and commitments from the students. Faculty play a key role in supporting rather than driving students’ learning.

We value risk taking. We believe that open ended inquiries that have an inherent risk are keys to wholesome learning, courage, creativity, and competence.

2. Guiding Principles, Assumptions, and Beliefs

Learning has irrevocably escaped the walls and gates of the schoolyard. Notwithstanding the fact that it never was fully trapped inside these walls and gates, the learning that happens within the k-16 years and in formal school and college settings has always worn the mantel of exclusive legitimacy. The quality, quantity, and recognition of the learning taking place outside of these confines are growing exponentially. MOOCs are one of the manifestations of the escape from the formal setting which forced the separation between competency (acquiring the material and passing the course) and credentialing (have the means to prove it to others). Many other forms of learning preceded MOOCs and many more are emerging thanks to a highly connected and open world. We recognize this fact and account for it in what we can and should provide to our students.

“Higher” Education is a necessity. Education beyond what is covered in the K-12 curriculum has become a necessity for the well-being of all citizens. Education beyond the K-12 is a right to all students, whether it is delivered through formal institutions or not. We believe it is important to integrate formal and informal learnings.

Students have a natural thirst for learning. We acknowledge students’ natural thirst for learning. Learning is most effective when it is driven by intrinsic motivation. External motivation can diminish intrinsic motivation. We see the role of the faculty as supporting the student-guided pursuit of knowledge while being mindful to support and not to counter student’s intrinsic motivation.

Students learn best in context and for a purpose. Learning just-in-time, with vertical relevance, is more effective and more lasting than learning just-in-case, with horizontal relevance. In addition, learning in more effective when it is connected to students’ values and aspirations.

We trust in students’ capacity to learn and to change. A student’s capacity to learn is constantly changing. Students’ mindset affects their capacity to learn. Students can learn to adapt a growth mindset and increase their learning capacity.

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3 MOOCs: Massively Open Online Courses.
4 Lilian Katz (engaging children’s minds) coined the term “horizontal relevance” things learned because they are needed now vs. “vertical relevance” things learned because they might be needed later for a test for example. Neuroscience shows that horizontally relevant things stick; vertically relevant are forgotten.
5 Carol Dweck, Mindset: The New Psychology of Success, 2006
The art of learning to learn must be practiced to be mastered.
We believe that one of the most important skills we help the students acquire is the ability to learn. Most accreditation agencies set “lifelong learning” as one of their criteria. We believe the process of lifelong learning is one that needs to be practiced repeatedly to be mastered. The role of the faculty is to provide the setting for this process and invite the students’ reflection on what they are learning and how they are learning it.

Students need the practice of learning and performing individually and in communities.
We believe that individual mastery is important but not sufficient. In addition to learning individually, students need to learn how to collaborate, share, and maximize the learning and performance of their community. Collective learning also improves individual learning as students learn best from their peers.

Students need a setting to ask big questions, address open ended problems and take risks.
We believe that these are key ingredients for the intellectual growth of the students and for preparing them to be innovative and adaptable.

Faculty’s presence (credit hours) is only correlated with the quantity of learning.
The faculty offer their presence and support to the students; the students guide the contents and speed of learning. Credit hours quantify the faculty’s presence; an orthogonal mechanism will be used to credential the learning such as certificates, badges, or any other units. Within the same credit hour container, students can potentially acquire different and a different number of credentials.

3. Signature Characteristics of PPI

3.1 Learning in PPI

The learning environment in PPI is characterized as follows.
- **It supports student autonomy.** Students are given all the freedom they are ready for, even when they themselves do not think they do. It is faculty’s responsibility to balance between autonomy and sense of competence.
- **The learning is led by the students.** Faculty provide the context and the support; students lead the pace and content of the learning.
- **It provides an environment for students to learn in context, in an integrated fashion.** Problem based learning is one of the ways in which faculty can provide context and integrate between disciplines.
- **Students learn by doing and by practicing.** While the science and technology change rapidly, the processes by which we use them to see opportunities, innovate, and address challenges remain more stable. Students’ learning includes the repeated practice of the innovation lifecycle through design and innovation projects.

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7. Innovation lifecycle: 1. Determining desirability, finding something that meets a human need or desire, 2. Assessing feasibility, researching whether the solution is technically feasible, and 3. Assessing viability, determining whether the solution is economically viable and marketable.
• **Learning is networked.** Learning in a community with others and from others is an important skill that students need to practice and master. Furthermore it is very effective means to individual learning.

• **Learning is individualized.** The current educational system creates a multitude of silos (departments, majors). Once a student selects a silo, learning is linear, uniform, and standard. By contrast, PPI provides an open integrated environment accepting a diverse set of students who are enrolled together; but the learning is individualized to and by the student.

• **Learning is global.** We live in a world that is increasingly open and global. Operating successfully in a global society across boundaries, languages, and cultures is an important component of the social development of the student. The learning of the student must include a global experience.

• **Learning is purposeful.** Learning is most effective when it resonates with the students’ sense of purpose and hunger to make a significant difference. Problem based learning, service learning and internships are ways by which learning can be made purposeful.

### 3.2 PPI Culture and Processes

The faculty are at the heart of the new PPI culture. Change starts and is sustained through the faculty. The academic professional development and processes are aligned with the learning culture.

• **Teaching in PPI is a collaborative enquiry:** faculty see themselves as researchers and developers in an open environment. They learn collectively by collaborating and sharing in their enquiries. Their learning spaces welcome the disruption of visitors, the collection of data, and they collaborate in the review and analysis of their endeavor.

• **Faculty are encouraged and supported as they take risks and experiment.** Risk taking is in the DNA of PPI. It applies to everyone involved. Faculty are encouraged and rewarded for innovation and experimentation.

• **Professional development and training is required for all PPI faculty.** To perform their duties in an effective way, the faculty are supported in trained in realizing the cultural shift from sage on the stage to guide on the side.

• **Faculty development on a continuous basis.** The role of faculty is to serve the students and support their learning. The role of PPI is to also serve the faculty and support their development as individuals and professionals. PPI will provide the faculty the necessary resources to continue to grow.

• **Aligning the faculty rewards system to the expectations.** PPI administration will ensure that PPI faculty are rewarded based on the values and assumptions outlined here.