open
[2016]
Welcome to the Pacific Northwest and Open 2016!

Our 20th annual conference is brought to you in partnership with the National Center for Engineering Pathways to Innovation (Epicenter). We are deeply appreciative to our principal sponsor, The Lemelson Foundation, whose generous, ongoing support makes this conference possible.

We’re thrilled to be here in Portland! You have a wide range of inspiring sessions, events and networking opportunities ahead.

Some key program highlights are:

• Lynelle Cameron, President & CEO of the Autodesk Foundation and Senior Director of Sustainability at Autodesk, Inc., will give the keynote speech during the Sustainable Practice Impact Award luncheon on Friday. We will award the $10,000 Sustainable Practice Impact Award to a worthy team or individual.

• The 20th anniversary luncheon plenary on Saturday, which will focus on the future impact of invention, innovation and entrepreneurship on individuals and ecosystems.

• A series of Open Minis—high-energy, short presentations describing programs from around the country.

• Open Exchanges: dynamic, interactive conversations on compelling topics.

• Open Minds at the Collaborative Life Sciences Building on Saturday night—a showcase of our best student teams and their brand new technologies. Celebrate our 20th anniversary with a party including bubbly and birthday cake!

Throughout the conference, you’ll have access to a wealth of excellent papers, posters, panels and workshops offering original thinking on compelling topics in learning and leading invention, innovation and entrepreneurship in higher education. The sessions are designed to be interactive and to provide actionable information and valuable connections to take home with you.

Please don’t hesitate to call upon any of the VentureWell staff throughout the conference for help, to learn more about us, or to tell us how we can help make this conference a success for you.

Enjoy!

Phil Weilerstein
President
VentureWell
VentureWell extends a heartfelt thank you to our generous conference sponsors and organizational funders.

The principal sponsor of open 2016 is The Lemelson Foundation.

Open 2016 is produced in collaboration with Epicenter.

Additional support for VentureWell programs provided by Autodesk, Keen, Herman Miller, NSF, USAID, Kauffman Foundation, and Grand Challenges Explorations.
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### SATURDAY, MARCH 5

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<td>7:00 am – 7:45 am</td>
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FRIDAY, MARCH 4

Schedule is also available on your mobile device at venturewell.org/open/schedule

Registration
Registration desk

Conference kickoff
Oregon Ballroom

Open Exchange

FRIDAY 8:45 am – 10:00 am
Creating a Sustainability Solutions Services Unit in the University Context
Tom Seager, Arizona State University at the Tempe Campus

Three years ago ASU set out to establish a “Global Sustainability Solutions Services” unit that would work with a wide variety of clients to co-develop practical, effective, and affordable solutions to pressing sustainability challenges in its local community and globally. This is part of ASU’s “New American University” model that seeks to have impact at scale on the greater society through transdisciplinary development and delivery of solutions. As such, it is a new form of university-based innovation and tech/transfer. To date, the unit has done 60 projects in Phoenix and five in other countries with projects and proposals in development in several other regions of the world. This Open Exchange will explore the lessons learned from creating this model and other similar university-based consulting/extension models that attendees have experience in designing, creating and operating.

FRIDAY 7:00 am – 7:30 am
Breakfast
Oregon Ballroom

FRIDAY 7:30 am – 8:30 am

We know it’s early, but come get energized! Try on some different roles as we discover ways to have tricky conversations with entrepreneur and innovation with the non-believers. You will walk away with some fun tools and a little word that may just add the magical fairy dust needed at faculty meetings and talks with administrators and donors...heck, it may even improve conversations with your partner or kids.

Sustainability
Salon A
8:45 am – 10:00 am

Workshop

Cultivating Class Innovation Through Transdisciplinary Teamwork and Sustainable Design
Thomas Kwan, Yale University

Maker spaces in academia offer unique opportunities to catalyze student innovation and serendipitous exchanges of creativity across all fields of study. In this approach, new avenues of entrepreneurship and ideation are being realized in unprecedented ways. The spirit of this process has been adopted in a course that utilizes sustainability and green product design to connect undergraduate, graduate, and professional students coming from various fields of study including engineering, chemistry, geology, history, business, economics, and management. Unique challenges arise from a transdisciplinary design course including implementing course activity to promote teamwork and innovation. Several class activities have been consolidated and adapted for this active, hands-on workshop where attendees will be asked to develop innovative products using biomimicry. Experiential learning will provide participants first-hand understanding of how multidisciplinary teamwork obstacles can be overcome and provide insight to sustainable design. Get your creative juices flowing for this energetic education session!

FRIDAY 7:00 am – 5:00 pm

FRIDAY 7:00 am – 7:30 am

Registration
Registration desk

Breakfast
Oregon Ballroom

FRIDAY 7:30 am – 8:30 am

Conference kickoff
Oregon Ballroom

Open Exchange

Global
Salon H
8:45 am – 10:00 am
Open Exchange

Immersive Design Experiences
Bryan Boulanger and John-David Yoder, Ohio Northern University

Magdalini Lagoudas, Texas A & M University - College Station

Immersive design experiences are high-impact educational experiences that offer exciting opportunities to develop entrepreneurially minded engineering students. While there are a growing number of immersive design experiences popping up on campuses across the country, each existing program has a different focus and setup. A common thread of these programs, however, is that students are engaged in very different ways compared to traditional classroom learning environments. This panel presents details and lessons learned from immersive design experiences conducted at Bucknell, Texas A&M University, and Ohio Northern University. Additionally, findings from on-going, KEEN-funded research into entrepreneurial mindset development through immersive design experiences occurring at Bucknell and Ohio Northern will be shared with participants.

Biomedical Engineering
Salon G
8:45 am – 10:00 am
Panel

Clinical Observational Design Experience: Extended clinical immersion
Jeremy Ackerman, Emory University School of Medicine
Raja Schaar and James Rains, Georgia Institute of Technology

For six years Clinical Observational Design Experience (CODE) has brought students into active Emergency Departments where they discover problems in healthcare. Students spend 6-8 hours a week in hospitals where they begin to understand how healthcare is delivered and discover the problems faced by clinicians and patients. Most clinical immersion programs have very limited time and limited access—essentially the students only see what their client wants them to see. Extended periods of time for observation lets them understand the broader context of the problems. Collectively they see similar issues play out at different facilities and they see how the problems they identify affect different stakeholders. Extended opportunities to observe in the clinical setting enhance students’ understanding of clinical problems. Members of the panel will include faculty who have shaped this course and who work with students on biomedical design projects before and after their clinical experience.

Workshop

A Reference Collection of Case Studies and Examples of Social Ventures
Benjamin Linder, Franklin W. Olin College of Engineering

Case studies and examples of successful social ventures are effective materials for engaging young learners in purposeful design and entrepreneurship. And, evidence from existing ventures provides information that can challenge or clarify development narratives, including myths that can diminish motivation and expectations. Yet, many people in development are unaware of the breadth of stories that exist and the lessons they hold. This session aims to identify a collection of standard as well as new cases and examples and their potential lessons that would make a valuable resource for educators and students of development alike. Emphasis will be placed on ventures with demonstrated high impact as well as potential for inspiration and insight across a range of sectors, including consideration of failure cases.
**Did We Really Make A Difference In The Lives of Our Students?**
Robert Beaury, Pennsylvania State University - University Park

The Engineering Entrepreneurship Minor at Penn State University has been in place since 2003 and was one of the first programs of its kind in the country. Since 2003, the program has served the entire PSU population of students, producing 495 graduates, with only 60% being engineering majors.

Beginning in August of 2015 an effort was initiated to connect with those graduates to find out how the minor impacted their professional and personal lives, including how many started new businesses or joined start-ups. The effort to connect with as many former students as possible will continue through the winter of 2016.

This presentation will summarize what happened to these people, what we have learned from their input, in terms of what we did right and what we didn’t, and how we plan to use what we have learned to change our classes and our extracurricular activities going forward.

**Adventures in a Center for Innovation & Entrepreneurship Start-up**
Mary Raber, Michigan Technological University

Michigan Tech University, through the Pathways to Innovation and University Innovation Fellows programs as well as other initiatives, is embarking on a path to start-up a new Center for Innovation & Entrepreneurship. In this presentation we will share our journey, which began with a benchmarking trip more than ten years ago. That trip and other associated internal and external assessment activities led to the implementation of a series of bootstrapped curricular and co-curricular programs. Those programs have developed into a current state of integrated initiatives, which include a new center housed within a new Honors College, Lean Start-up curriculum implementation, I-Corps Site program development, and creation of maker spaces. Within the presentation we will discuss how we have tapped into student passion for campus change, and other experiences and lessons we have learned along the way that have brought us from benchmarking, to bootstrap, to formal implementation of the referenced programs.

**Intersection: Fostering innovation in undergraduate education through thematic interdisciplinary programs**
Ian Cottingham, University of Nebraska-Lincoln

The increasing focus in higher education on producing outcomes that drive economic development has spurred a move towards the inclusion of entrepreneurship in engineering programs. These programs train graduates in processes and methodologies associated with creating value in the marketplace using technology. Challenges range from breaking through silos between engineering and business programs to identifying pedagogical approaches that support curricular integration across disciplines. Despite success in many programs, innovation in education remains elusive and when achieved, often comes at great expense. In this presentation we explore how the Jeffrey S. Raikes School at the University of Nebraska has been able to build a platform for innovation studies by integrating two or more academic disciplines using the themes of model and design thinking. We approach the integration concept using computer science and business as examples, and discuss more broadly how our platform enables the reduction of Institutional inertia for innovation programs.

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**Introducing Entrepreneurship to Ursinus College: Pitfalls and progress**
April Kontostathis, Ursinus College

What happens when entrepreneurship is introduced to a small, residential, traditional liberal arts college? In this presentation, Ursinus College’s U-Imagine Center for Integrative and Entrepreneurial Studies will serve as a case study to explore the opportunities, challenges and rewards inherent in developing an entrepreneurship program at a small college. U-Imagine was formally approved in December 2015, although the programming began a year earlier and continues to evolve. The many lessons learned along the journey toward approval have been transformed into a set of best practices designed to help other institutions that are developing or revitalizing their entrepreneurship programs. This session will present these best practices, highlighting examples from U-Imagine, and providing opportunities for the audience to share their input in terms of what we did right and what we didn’t, and how we plan to use what we have learned to change our classes and our extracurricular activities going forward.
When Education and Entrepreneurship Collide!
Khanjan Mehta, Pennsylvania State University - University Park
Soumya Acharya, Johns Hopkins University

While some student teams successfully launch their products in the developing world, underrepresented teams with high potential for impact fail because they cannot, or do not want to, make multi-year commitments to their ventures. Even for the few teams that decide to make the commitment, the academic linkages that provided them with experiential learning opportunities, access to subject-matter experts, laboratory facilities, and other valuable resources weaken over time. Multi-year ventures where one student team after another advances the venture through various phases of its lifecycle is another model of entrepreneurial engagement. While students are still at the helm of these ventures, faculty members are intricately involved in all aspects of the projects and shepherd the ventures across their entire lifecycle. This panel discussion will contrast these two academic models of engagement with a specific emphasis on how the entrepreneurial and educational missions might conflict in both cases.

Gender and Entrepreneurship: Images, identity & belonging
Nathalie Duval-Couetil, Purdue University

When education and entrepreneurship collide, the consequences is essential to avoid perpetuating the implicit biases we have about who can be an entrepreneur. Conclusions that reinforce stereotypes about who truly belongs. Raising awareness of these unintended sub-populations. These lessons may be useful for other institutions with a similar size, culture, and/or particular opportunities.

Retention Program for Freshmen & Sophomores: Lessons learned
Sharon Jones and Caitlin Cairncross, University of Portland

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Strategic Doing in the Classroom: Teaching students the deep skills of collaboration
Scott Hutcherson, Purdue University

Our students will have to be effective collaborators to be successful in their careers, yet we often expect them to pick up the skills of collaboration on their own. We tell students they must collaborate, in teams working on class projects or as they connect with others on campus or off, but we rarely teach them how to collaborate. Strategic Doing (SD) is a discipline that teaches the deep skills of collaboration. SD is a more open, agile, iterative approach to strategy than tools like strategic planning. Strategic planning, originating in the military, works in command-and-control organizations. SD is designed for open, loosely joined networks where nobody can tell anybody else what to do—just the sort of environment in which inventors, innovators, and entrepreneurs find themselves. This workshop will showcase the teaching tools being used at Purdue University and elsewhere to teach collaboration through the principles of Strategic Doing.

Driving Diversity in University Settings
Kim Davis King and Lada Raschiova, University of California, San Diego

The MystartupXX program serves to encourage and empower female students interested in entrepreneurship and help them to reach their potential by starting innovative, scalable, technology-driven companies. The 12-session acceleration program offers young women entrepreneurs at UCSD the environment to learn how to start innovative companies, share start-up experiences with cohort peers and industry mentors, and develop and iterate their business ideas. MystartupXX is open to students across UCSanDiego. As a result of these efforts, the enrollment in our program increased from three to ten teams per year. In addition, we were awarded the White House SBA award, which generated publicity and resulted in several donations to the program. The number of mentors keeps increasing. We are being contacted by universities and organizations across the US to help them design similar programs focused on diversity and supporting female entrepreneurs.

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FRIDAY, MARCH 4

Luncheon
Oregon Ballroom
12:00 pm – 2:00 pm

Sustainable Practice Impact Award luncheon with keynote speaker Lynelle Cameron
Lynelle Cameron, Autodesk Foundation

The Sustainable Practice Impact Award recognizes companies or individuals who have demonstrated outstanding achievement in developing clean technologies, implementing sustainable practices in their businesses or providing exceptional educational opportunities to university students. The award reflects The Lemelson Foundation and VentureWell’s strong commitment to supporting technological innovation that improves the world.

The keynote speaker will be Lynelle Cameron, President & CEO of the Autodesk Foundation and Senior Director of Sustainability at Autodesk, Inc.

Lynelle Cameron is President & CEO of the Autodesk Foundation and Senior Director of Sustainability at Autodesk, Inc. She established both to invest in and support people who are designing solutions to solve today’s most-epic challenges. Under Cameron’s leadership, Autodesk created the Sustainability Workshop, an online learning platform teaching sustainable design that has reached over two million students and professionals worldwide, and launched two software donation programs, the Technology Impact program for nonprofit organizations, and the Entrepreneur Impact program for early-stage cleantech and social impact companies around the world. She’s also led the company in setting ambitious science-based greenhouse gas reduction targets, committing to 100% renewable energy and integrated reporting. Since Lynelle joined eight years ago, Autodesk has received numerous awards for sustainability leadership and innovation.

FRIDAY 2:15 pm - 3:30 pm

Resources
Salon D
2:15 pm – 3:30 pm
Panel

VentureWell Grants and Resources
Laura Sampath and Patricia Boynton, VentureWell

This session will provide an update on current and future VentureWell programs that support technology invention, innovation and entrepreneurship. We will give an overview of our E-Team and Faculty grants and offer some tips and suggestions to increase your chances of being funded. Also on hand will be a panel of faculty grantees to talk about how they’ve leveraged VentureWell resources to enhance their university’s Innovation and entrepreneurship ecosystem, and a current E-Team to discuss their experiences with the E-Team Program.

Program Models
Salon H
2:15 pm – 3:30 pm
Open Exchange

I Finished My Entrepreneurship Program: Now what?
Ross Malaga and Jason Frasca, Montclair State University

Many students and student teams struggle with keeping their entrepreneurial vision and projects going once they complete their coursework. This Open Exchange will examine the best ideas to keep students engaged beyond the entrepreneurial curriculum.

Resources
Salon G
2:15 pm – 3:30 pm
Panel

Global

‘SystHIM Change: How to engage and inspire university women in male-dominated spaces’
Audrey Yfert-Saleem, Oregon State University
Marla Parker and Susan Halverson, Arizona State University

Research demonstrates that entrepreneurship has a positive influence on rates of entrepreneurship [e.g., Zhao, Zeibert, & Hills, 2005]. Yet, an examination of academic entrepreneurship offerings shows that women participate at lower rates than men (Choi, Jeong, & Kehoe, 2012). Despite the fact that women comprise 50% of the U.S. population, they lead 35% of entrepreneurial activity (Kauffman, 2009). We propose that focused effort in building entrepreneurship curriculum plays a key role in addressing the gap between men and women’s entrepreneurial activity. And, by increasing the number of women with entrepreneurship education, we can dramatically increase the number of businesses created and succeeding. Our presenters have spent a year applying gender scholarship to curriculum development, experimenting with solutions to the gap. Through our workshop, participants will walk away with an understanding of the gap and influencing factors, as well as ideas and plans to create systemic solutions that promote inclusivity.

Maker spaces
Salon B
2:15 pm – 3:30 pm
Open Malls

SBU Innovation Lab: A new approach to innovation and entrepreneurship
David Ecker, Stony Brook University

Stony Brook University had no direction in the maker space movement that was taking the nation by storm. A year ago we put the engine in high gear and developed the SBU Innovation Lab, which is a cross-discipline approach to innovation and entrepreneurship. We created a facility with very little funds (less than $5,000 to purchase equipment) and have pushed the campus to embrace innovation through our workshops, facility and WolfieTank (pitch competition).

Maker Spaces that Set the Stage for Lifelong Learning
Susan Whitmer, Herman Miller, Inc.

Creativity, making, hacking, and coworking have been part of STEM, business, and arts curricula for decades. We view these activities differently depending on the discipline. In science and engineering, these activities are viewed as invention or innovation; in business, entrepreneurship; in math, problem-solving; and in the arts, performance. What the advent of the makerspace has done is illuminate the connectedness between these learning-by-doing activities and the impact on lifelong learning, from pre-k to gray. In this session we will present examples of spaces that foster creativity, making, hacking, and coworking in elementary education through secondary education. We will highlight the value of learning-by-doing on lifelong learning within the ecosystems of healthcare and corporate learning. Participants will walk away with an understanding of how active learning and learning-by-doing are reframing how we learn, unlearn, and relearn.

Follow us on Twitter @venturewell and use hashtag #vwopen // Like us on Facebook facebook.com/VentureWell
Transitioning to a Student-managed Maker Space
Patricia Sullivan, Luke Nogales, Rolfie Sassenfeld and Ed Pines, New Mexico State University

Over the past two years, the College of Engineering at New Mexico State University has worked to develop and grow student engagement in the Aggie Innovation Space, a multidisciplinary maker space facility. In fall 2015, the college transitioned management of the facility from an operations manager to one that is fully managed by on-campus co-op students. We will discuss the adoption of an organizational management structure that supports career-critical skills (finance, marketing, organizational dynamics, technical mentoring, teams, etc.) gained through the co-op management structure, and how a student-managed facility has shifted student engagement from traditional course-based projects to more innovative and entrepreneurial initiatives.

Tracking Maker Space Utilization Using a Mobile App
Patricia Sullivan and Rolfie Sassenfeld, New Mexico State University

We present a novel data collection system incorporating a mobile app and online database for tracking and measuring utilization of a makerspace. Our system offers the ability to track a visitor's time spent in the makerspace and provides detailed reports on the activities of the visitor. Our system is customisable and offers flexibility with respect to the types of activities that are logged into the database. For additional detail, we demonstrate a process for cross-referencing student information systems to obtain demographic information of the visitors.

Business Model Canvas for Early-stage Idea Exploration
Nik Rokop, Illinois Institute of Technology

Having trouble using the Business Model Canvas for early-stage ideas? Osterwalder’s canvas is not set up ideally for exploration-stage business ideas. I've developed and used a version of the BMC that simplifies and clarifies the process. I’ve used this with high school students and entrepreneurs.

Business Model Canvas Meets Evidence: The intersection of innovation tools
Tallie Casucci and Jean Shipman, University of Utah

Students have access to hundreds of databases, information resources, and tools licensed by academic libraries. This abundance of resources can be overwhelming, especially when developing products. To alleviate this problem, health science librarians paired databases, information resources, and tools to the individual sections of the Business Model Canvas, for use by students registered in a medical device competition. This visual representation of relevant information resources enabled teams to target their evidence searching to the most appropriate tools.

Challenge Locator: A resource for innovators and entrepreneurs
Dan Freeman, University of Delaware

The University of Delaware Horn Program in Entrepreneurship has developed a searchable online directory of open innovation, grand challenge and Prize opportunities. This directory is envisioned as a starting point for innovators and entrepreneurs who are seeking important problems to solve, and a means of increasing the impact of student entrepreneurship activity.

Finding Real Problems to Solve
Brendy Nagel, Georgia Institute of Technology-Main Campus

I have an undergraduate class activity to share. I call it “How Things Work”. Students get out of the classroom and take a free tour of a local facility (grocery store, post office or water works). During the tour they are challenged to find a dozen problems to solve.

Business Model Generation:

Program Models
Salon I
4:00 pm - 5:15 pm
Workshop

Program Models
Salon A
4:00 pm - 5:15 pm
Workshop

So You Want to Offer a Pop-up?
Meenu Singh, University of Maryland, College Park
Leticia Brites Cavagnaro, Stanford University
Magdalini Lagosutis, Texas A & M University - College Station
Joseph Tranquille, Bucknell University
Patricia Sullivan, New Mexico State University

Pop-up classes are short, interactive workshops that are informal and discovery-based. The goal of this workshop is to help participants leave with a plan for how to pitch and manage pop-ups at their university. Participants will be led through a series of questions that are designed to help them clarify the purpose, format and organization of their pop-ups, as these elements will vary at different universities. The workshop will be led by seasoned pop-up instructors and organizers who will introduce what pop-ups are, ask key questions, help participants formulate a plan and then challenge them to identify a first step when they return to their campus.

Launching an Interdisciplinary Entrepreneurial Capstone Design Experience: Blast-off or fizzle out?
Thomas Katona, Jonathan York and Lynne Silovsky, California Polytechnic State University, San Luis Obispo

A cross-college entrepreneurial capstone design experience sounds great in concept, but is it really great in implementation and practice? This session will review the lessons learned (good, bad, and ugly) in implementing such a course that will be finishing its first year. A panel of faculty and students will host an open discussion and Q&A to outline challenges and approaches taken with regard to curricular approval, team formation, project selection, funding, and cross-curricular entrepreneurial design using Lean LaunchPad and agile engineering. In addition, expected student outcomes will be discussed in comparison to other extracurricular entrepreneurial programming already offered by the University Center for Innovation and Entrepreneurship, and to the more traditional single discipline capstone design courses. The team’s experiences will be used to facilitate discussion amongst participants with a goal of aggregating best practices.

So You Want to Offer a Pop-up...
Hundreds of millions of people in developing nations are at risk of debilitation or death from arsenic and fluoride poisoning in their drinking water. Unfortunately, economically sustainable remediation remains elusive. We discuss the evolution of village-scale arsenic and fluoride treatment technologies, and an accompanying microenterprise business model, developed at Lehigh University with support from VentureWell. Local communities and local entrepreneurs are now self-sustainably operating village-scale arsenic systems, benefitting more than 200,000 individuals in India, Nepal, Cambodia, Laos, Bangladesh and Kenya. Pilots underway target fluoride. We outline the role of students, faculty, research labs, capstone projects, international partners, and a social entrepreneurial startup by student and faculty principles. We address barriers, lessons learned, present data on outcomes across multiple national contexts, and identify key economic and groundwater conditions for self-sustainable microenterprise operations. Well run microenterprise operations generate income several times the poverty line while simultaneously reducing arsenic well below world health standards.

Two of the most popular entrepreneurship teaching methods are Lean Launchpad (LLP), led by Steve Blank at UC Berkeley and Stanford, and Disciplined Entrepreneurship (DE), led by Bill Aulet at MIT. Cal Lutheran’s faculty have used both successfully and found each to have particular strengths and pose specific challenges. In this session, we will compare and contrast LLP and DE, share our classroom experiences, and explain how we fit both techniques into our curriculum. We also will share a holistic framework for teaching entrepreneurship that transcends both techniques.

We believe that the practice of teaching entrepreneurship has reached an inflection point, progressing from a fringe activity to a mainstream educational force on most campuses. This is a good time to assess progress, evaluate strengths and weaknesses, and chart a course for the next generation of entrepreneurship education, so that the momentum gained in recent years can be maintained.

From Lab and SocEnt Startup to Impact on 200,000 lives: Sustainable microenterprise for village-scale arsenic removal from drinking water

Todd Watkins, Michael German and Arup SenGupta, Lehigh University

East Coast vs. West Coast: Comparing Lean Launchpad and Disciplined Entrepreneurship

Michael Panesis and Renee Rock, California Lutheran University
FRIDAY, MARCH 4
open[2016]

FRIDAY 5:30 pm – 7:00 pm

Mt. Hood & Foyer
Poster Session
5:30 pm – 7:00 pm

Poster Session
Featuring posters on a range of topics related to entrepreneurship. A great place to
network and learn about new projects!

FRIDAY 5:30 pm – 8:00 pm

Salon A
5:30 pm – 8:00 pm
Epicenter Research Summit 2.0 (pre-registration required)
Sheri Sheppard, Stanford University
Nathalie Duval-Coutell, Purdue University
Mary Besterfield-Sacre, University of Pittsburgh
Sarah Zappe, Pennsylvania State University

What are leading researchers already discovering about pedagogies that work, what attracts
different students to entrepreneurship, and how are schools and programs effectively creating
opportunities for their students? What new research is needed to advance the quality of
entrepreneurship and innovation education for engineering students? This 2.5-hour workshop
(followed by dinner) addresses these questions through research updates and focused
discussion on the greatest gaps in research on entrepreneurship education for engineering
students. Come to the workshop prepared to share your research, provide input to others on
their work, and be part of continuing to define research in this space. This event will be
followed by a dinner at 8:30 pm; the restaurant will be within walking distance from the hotel
(cost of dinner is included in the registration fee).

FRIDAY 7:00 pm
Dinner on your own

SATURDAY, MARCH 5
open[2016]

Full schedule is available on your mobile device at venturewell.org/open/schedule

SATURDAY 7:00 am – 7:45 am
Fun Run
7:00 am – 7:45 am

Get out of the hotel and explore Portland on foot! Join us for a 2.5-mile run led by VentureWell
staff. There’s no need to sign up, just show up in the lobby in good shoes at 7 am. As an extra
incentive, one of our Open Minds teams, Physiclo, will be joining us for the run and showcasing
their ‘compression tights with resistance’ product. Offering a 20%-off coupon to everyone who
shows up, as part of our 20th anniversary celebration!

SATURDAY 8:00 am – 5:00 pm
Registration
Registration desk

SATURDAY 8:00 am – 9:00 am
Breakfast on your own

SATURDAY 9:00 am – 10:15 am
Mockups & Round Robin Feedback: Iterating through critique
Amy O’Keefe, Kim Hoffmann and Elizabeth Gerber, Northwestern University

Recognizing that critique is a gift designers share with one another, this exercise explores meth-
ods for delivering and iterating on design feedback in small and large group situations. We’ll
pair two of our favorite tools, Mockups & Round Robin, for an engaging workshop that includes
low-fidelity prototyping and allows participants to experience the benefits of refining concepts
and POVs through short-focused rounds of critique. The format is intended to maximize oppor-
tunities for iterative feedback and promote:
•Rapid iteration of ideas based on newly gained insights
•Modeling specificity within time constraints
•Eliciting different perspectives in quick succession
•Self-awareness and skills for accepting feedback
•Development of shared design leadership skills

Games
Salon H
9:00 am – 10:15 am
Open Exchange

Innovation and Entrepreneurship Games
Cheryl Bodnar, Rowan University
Joseph Transquille, Bucknell University
Victoria Matthew, VentureWell
Leticia Britos Cavagnaro, Stanford University

During this Open Exchange, faculty and students will have the opportunity to discuss the
nuances and challenges of using games as instructional tools for innovation and entrepreneurship.
Those new to the use of games and seasoned facilitators are invited to join us and:
•Share games you’ve successfully utilized in your classroom
•Troubleshoot challenges you are encountering, be that around game design,
facilitation or assessment
•Connect with a community of like-minded faculty with an abundance of ideas and expertise
Panel
Salon G
Global
9:00 am – 10:15 am
Program Models

Dorn Carranza, VentureWell
John Ochs, Lehigh University
Jonathan York, California Polytechnic State University, San Luis Obispo
Khanjan Mehta, Pennsylvania State University - University Park
Michael Marasco, Northwestern University
Tom O’Donnell, University of Massachusetts, Lowell
Jeff Babin, University of Pennsylvania
Ranj Vaidyanathan, Oklahoma State University
Dale McCauley, Oregon State University

No matter what your students’ courses of study or career plans are, VentureWell E-Team Program grants can help them succeed as future technology entrepreneurs. But not all faculty and students have been able to fully embrace these funding, training and support opportunities.

Join an informal fishbowl conversation with faculty that have enabled the formation and development of E-Teams. Learn about what they did in the process of identifying, motivating and supporting students on their paths to becoming successful technology entrepreneurs.

Participants inside the fishbowl include faculty, but all student attendees are encouraged to participate and perhaps influence your university’s entrepreneurial ecosystem!

Workshop
Salon B
Biomedical Engineering
9:00 am – 10:15 am
Research

Biomedical Engineering
9:00 am – 10:15 am
Panel

Evidence of an Entrepreneurial Mindset
Helen Chen, Stanford University
Rebecca DeVasher, Rose-Hulman Institute of Technology

Our global society and economy face significant challenges in the areas of health, communications, environment, sustainability, and security in the 21st century. Correspondingly, there is growing recognition of the role of entrepreneurship education as a means to enhance and extend the training of engineers who possess not only the skills but also the mindsets for innovation, creativity, empathy, resilience, and self-awareness.

This highly interactive session will draw upon the framework developed by the Kern Entrepreneurial Engineering Network (KEEP) to operationalize the concept of an “entrepreneurial mindset” – defining its attributes, how it can be measured, and determining what kinds of evidence would effectively demonstrate entrepreneurial capabilities. Participants will view examples of student-created videos from Rose-Hulman Institute of Technology’s matching program identifying personal and professional milestones in becoming well-rounded, entrepreneurial-minded engineers. Emerging research from Epicenter, the National Center for Engineering Pathways to Innovation, will highlight the contributions of diverse curricular and co-curricular experiences and strategies for faculty interested in implementing reflective practices to promote entrepreneurial-minded learning will be shared from the Consortium to Promote Reflection in Engineering Education (CPREE). Participants will begin to collaboratively brainstorm approaches for assessing and evaluating evidence of entrepreneurial thinking and considering the role of badging credentials supported by evidence-based ePortfolios and other reflective approaches as starting points for ongoing exploration.

3D Printing + Creativity Disrupts Entrepreneurship & Design: A workshop on teaching transformative creativity in entrepreneurship programs
Iain Kerr and Jason Frasca, Montclair State University

This will be a hands-on, interactive workshop that takes on the radical challenge of understanding and teaching creativity in an entrepreneurship setting. We will both introduce a new, highly effective model of Disruptive Creativity and present tools to transform entrepreneurship teaching in the face of the paradigmatic challenge Disruptive Creativity presents to design, business and entrepreneurship. The workshop takes participants through a fast-paced, creative exercise using 3D printing (participants will collaboratively make something innovative in real time). The final part of the workshop will focus directly on teaching creativity and the ramifications of using models of Disruptive Creativity in entrepreneurship programs. Participants will leave with tools, concepts, skills and motivation to creatively transform models of design, teaching and entrepreneurship (as well as a handy review booklet).

E-Team Enablers: How faculty can best support E-Teams
Kent Dunlap, University of Wisconsin-Madison
John Ochs, Lehigh University
Jonathan York, California Polytechnic State University, San Luis Obispo
Khanjan Mehta, Pennsylvania State University - University Park
Michael Marasco, Northwestern University
Tom O’Donnell, University of Massachusetts, Lowell
Jeff Babin, University of Pennsylvania
Ranj Vaidyanathan, Oklahoma State University
Dale McCauley, Oregon State University

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Panel
Salon B
Biomedical Engineering
9:00 am – 10:15 am

Biomedical Innovation, a Hands-on Clinical Approach
Tim Sotman, Tommy Das, Paul Rizk and Mary Ashley Liu,
University of Texas Southwestern Medical School

UT Southwestern is a basic science-focused research institution that fosters a deep dedication to clinical excellence; however, there is minimal entrepreneurial development. While important scientific discoveries are made here, much of this progress remains stuck in the lab and academic papers without much hope of being translated into daily clinical practice. Through student-driven interest, the Biomedical Innovation program was formed to teach students the entrepreneurial process. Through hands-on, project-based learning, students cultivate their capacity to innovate, invent, and improve the quality of clinical care. The program brings together multiple disciplines, drawing from the collective experience of entrepreneurial physicians, design engineers, clinical practitioners, and entrepreneurial experts. The interaction of such diverse yet compatible experts creates a rich environment for clinical innovation and allows students to strengthen communication and critical thinking skills that will benefit them in their future careers.

Development of Key Professional Skills through Biomedical Social Projects in Engineering Students
Manuela Paulina Trejo Ramirez, ISTEM Campus León

Technology transfer mechanisms are a proven way to ensure that the developments in universities from labs and classrooms are taken to the next step, reach their target users and make a significant impact in the community. While medicine has benefited considerably from technological development, increasing both the quality and effectiveness of services delivered to patients, in Mexico new technologies are often expensive and only available in private or specialized hospitals. One way to reach the most vulnerable sectors is the development of technology-based biomedical solutions oriented to democratize healthcare at a lower cost. This idea implies a challenge to students and professors in universities. At the same time, outcomes from these projects include an increase in professional skills like social engagement, resilience, entrepreneurship and the development of engineering solutions.

Research
Portland
9:00 am – 10:15 am
Panel

Harder Than You Think: Surprises in starting a social venture abroad
John Gershenson, Michigan Technological University

This panel will focus on the many surprises in starting a social venture abroad, including customs, visas, hiring, funding, travel, and more. Panelists will talk in detail about what really happened and what they learned along the way.

Panel
Salon D
Program Models
9:00 am – 10:15 am

Program grants can help them succeed as future technology entrepreneurs. But not all faculty and students have been able to fully embrace these funding, training and support opportunities.

Join an informal fishbowl conversation with faculty that have enabled the formation and development of E-Teams. Learn about what they did in the process of identifying, motivating and supporting students on their paths to becoming successful technology entrepreneurs.

Participants inside the fishbowl include faculty, but all student attendees are encouraged to participate and perhaps influence your university’s entrepreneurial ecosystem!

Global
Salon D
Program Models
9:00 am – 10:15 am
Panel

Follow us on Twitter @venturewell and use hashtag #vwopen // Like us on Facebook venturewell.org/open/schedule
A Visit into the World of Healthcare Wearables
Raja Schaar, Georgia Institute of Technology-Main Campus

How do you get biomedical engineering students excited about meeting the challenges of wearable technology? During the summer of 2015, Georgia Tech piloted a wearable design course focused on global health and wellbeing for biomedical engineering undergraduates. This full-semester course unfolded over a compressed five-week period during a study abroad program in Galway, Ireland. Students entered the course with little to no knowledge in basic circuits, microcontroller prototyping, or coding ability. They left the course with an expanded technical skill-set, a deeper understanding of the implications of wearables in the developing world, and the confidence to compete in a global design competition. This presentation will include a course overview, the challenges of teaching abroad, project ideas, and an update on the teams’ progress beyond the course.

Entrepreneurial Mindset in PhD STEM Education: Student success
Terri Camesano, Worcester Polytechnic Institute

At WPI, we have been working on incorporating innovation and entrepreneurship into the curriculums of PhD students in biomedical engineering, biology and related fields. We are training 25 PhD students over a period of five years, through a partnership between faculty from engineering, arts & sciences, and the Foisie School of Business. Our students are taught to develop an innovative mindset from the day they start their PhD project. This presentation focuses on student success stories, highlighting recent examples of student-driven research toward commercialization of biomedical therapies.

Flipping the Switch: Activating student learners
Humera Fasihuddin and Katie Dzugan, VentureWell
Etienne Wenger-Trayner & Beverly Wenger-Trayner, Wenger-Trayner
Leticia Britos Cavagnaro, Stanford University
Mary Raber, Michigan Technological University
Breanne Przestrzelski, Clemson University
Meenu Singh, University of Maryland, College Park
Brad Turner & Magan Dykema, Michigan Technological University

Most of us can remember an experience in our lives that transformed us. When a switch was flipped within us. When something inside us became activated. Our starting points and outcomes may have been different, but the experience itself often has the same characteristics. It often involves other people, coming to a shared awareness, bonding over the newfound knowledge and committing to change their lives in some way. What's more, the experience leaves us with a greater sense of purpose and understanding of the world around us. Is it possible to intentionally design transformational experiences that flip the switch? We believe so. In this session, participants will hear the story of three teams that leverage design, creativity, innovation and entrepreneurship to create transformational experiences that are designed to systematically 'flip the switch' and activate learners. First, hear about a University Innovation Fellows workshop for faculty learners who seek to embed Design Thinking pedagogy into their courses. Next, learn about Aftershift, a national initiative to engage students in the I&E ecosystem early in their freshman experience as a means to curb STEM attrition. Finally, hear from researchers Bev and Etienne Wenger who coined the term ‘communities of practice’ and whose social learning theory is a useful framework for understanding how educators might design transformational learning experiences. Participants will come away with each team's top five requirements. This presentation will include a course overview, the challenges of teaching abroad, project ideas, and an update on the teams’ progress beyond the course.

Integrating an Entrepreneurship Minor into Your Engineering Curriculum
John Ochs, Lehigh University
Robert Beaurry, Pennsylvania State University - University Park
Matt Gibson, University of Michigan, Ann Arbor
Humera Fasihuddin and Katie Dzugan, VentureWell

Engineering curricula are notoriously inflexible and crammed with required courses and required general studies electives. This panel will explore ways that several schools have integrated entrepreneurship minors with engineering majors while not adding to the graduation requirements.

Learning with Others: Examining the value of collaboration when developing entrepreneurship initiatives
Steven Tello, University of Massachusetts, Lowell
James McColgan, Queen’s University
Ilya Avdeev, University of Wisconsin-Milwaukee
Brent Sebold, Arizona State University

This session will examine the value of collaboration when developing campus-wide entrepreneurship initiatives. Panelists representing four campuses in various stages of developing broad, entrepreneurial initiatives will discuss their successes and challenges in leveraging both internal and external collaborations. Panelists will share landscape maps documenting the growth of their respective initiatives, and will discuss the strategies used to grow and anchor these efforts in campus culture. Particular attention will focus on how collaboration supported the development of these initiatives, and current avenues for collaboration will be discussed. Those attending this session will have an opportunity to share challenges and opportunities on their respective campuses, with the intent of seeding future collaboration.

FUNDing: Entrepreneurial Skill Development in Student Organizations
Scott Paja, Dale McCauley and Eduardo Cotilla-Sanchez, Oregon State University

This session will feature members from entrepreneurial student organizations in the College of Engineering and the College of Business at Oregon State University to share best practices in fundraising and corporate sponsorships, as well as the subsequent stewardship of resources and relationship management. Student organizations and related initiatives will enhance their ability to successfully navigate funding solicitation through participation in this session, with an emphasis on highly heterogeneous academic funding ecosystems.
A cross-sector dialogue on the factors fueling demand for social entrepreneurship and social innovation, the related career paths for students graduating from many universities.

However, despite a general understanding of the value of design methods in sparking creativity, entrepreneurs who have recognized design thinking as catalytic to their innovation processes.

International organizations such as UNICEF and USAID are adopting human-centered design strategies to innovate for humanitarian purposes, following corporations and other half working in interdisciplinary teams on a company innovation challenge. I will focus on how ICubo has evolved, the methodology used, the experience working with companies, outputs, challenges, and future plans.

Design for social innovation is growing from a niche specialization to an emerging global phenomenon. International organizations such as UNICEF and USAID are adopting human-centered design strategies to innovate for humanitarian purposes, following corporations and entrepreneurs who have recognized design thinking as catalytic to their innovation processes. However, despite a general understanding of the value of design methods in sparking creativity, many questions remain with regard to how design manifests and what it delivers. Moreover, despite an increase in university programs integrating design and curricula focused on social entrepreneurship and social innovation, the related career paths for students graduating from these programs remain uncharted territory.

We will present on our work in the field of peer-assessment of engineering design projects conducted at an undergraduate design-based learning unit. Students in design education courses often receive little experience or overall exposure to the breadth of design problems typically encountered by designers within the time frame of a course. While participating in design-based learning courses, students often focus on a single project, losing the opportunity to learn from other peer designs and peer design thinking. Self and peer evaluation may be effective as classroom assessment techniques (CAT) to demonstrate the competencies are being transferred to the students. Finally, the exercises are also used as a core component of faculty development workshops aimed at teaching best practices. Participants are provided the basic knowledge to replicate activities in their own classrooms.

The motivation behind this presentation is to demonstrate how in-class active exercises and design challenges can be used to introduce key design concepts and entrepreneurial minded learning (EML) competencies. These exercises have been successfully implemented in a variety of undergraduate engineering and design courses as well as with high school students during summer camps to attract them to entrepreneurial engineering programs. The exercises are also effective as a classroom assessment technique (CAT) to demonstrate the competencies are being transferred to the students. Finally, the exercises are also used as a core component of faculty development workshops aimed at teaching best practices. Participants are provided the basic knowledge to replicate activities in their own classrooms.

Developing Interdisciplinary innovation in Chile
Paul O’Toole, Universidad del Desarrollo

ICubo has been a pioneer in Chile, the region (and I believe globally) since bringing together three Faculties to form ICubo in 2011. These three Faculties—Design, Engineering and Business—commit their students, professors and multiple other resources to develop a series of interdisciplinary programs that focus on teaching best-in-class innovation methodologies. The club is currently the outstanding program of ICubo, which has its own building on two separate campuses and offers final year students the opportunity to spend 60% of the year immersed in the program. Students spend half of the year learning methodologies and the other half working in interdisciplinary teams on a company innovation challenge. I will focus on how ICubo has evolved, the methodology used, the experience working with companies, outputs, challenges, and future plans.

Designing Career Pathways in Social Innovation for a World in Flux
Jennifer May and Mariana Amatullo, ArtCenter College of Design

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Lessons from SIMPLEX: A Flight to creativity
Harold Fried, Union College

Min Basadur published SIMPLEX A Flight to Creativity in 1994. After four printings, the book is out of print. Simplified versions of the simplex method live on in the plethora of recent publications that are part of the creativity craze. This Open Mini revives the many forgotten lessons from the original book.
### Redefining Success: Lessons from design thinking to meet real world needs

**Danielle Lake, Grand Valley State University**

The goals of this Open Mini are to (1) provide hybrid strategies and tools for supporting undergraduate collaborative innovation on real world problems; (2) detail sample assignment and project ideas; (3) disseminate lessons learned from classroom experience; and (4) explore how the tools provided can be repurposed for participants’ own use.

### Global

**Salon I** 2:45 pm – 4:00 pm  
**Workshop**

**AB 2.45 pm – 4:00 pm**

**Panel**

**Program Models**

**Salon D** 2:45 pm – 4:00 pm  
**Open Minis**

**NUvention: An interdisciplinary and experiential journey**

**Michael Marasco, Todd Warren and Mark Werwath, Northwestern University**

We will present our reflections on building Northwestern University’s interdisciplinary and experiential entrepreneurship flagship, NUvention. What started as an initial class on medical entrepreneurship in 2007 has ballooned to seven classes in all areas from nanotechnology to Web and Media to Arts. Todd, Mike and Mark will discuss their lessons learned over the past nine years and their future plans. The results of an alumni survey will be shared.

### VentureWell 20th anniversary celebration

**Phil Wellerstein, VentureWell**  
**Todd Warren, Northwestern University**  
**Abigail Barrow, Massachusetts Technology Transfer Center**  
**Jerry Engel, University of California, Berkeley**

Join us for a special luncheon celebrating our community and our accomplishments over the last 20 years. A highlight will be a panel discussion about the future of VentureWell, addressing what the next decades will hold for us and what will be the emerging needs of our faculty, innovators, and innovation ecosystems.

### Finding Product-Market Fit in Emerging Markets: How will we know?

**Dat Tran and Dorn Carranza, VentureWell**

Are you interested in introducing an innovation to an emerging market? Join us for a fun session on how to navigate its market value chain–business transaction flow from initial sourcing to customers/end-users. We will provide a practical value chain framework and exercise to map who does what in the value chain, with the goal of creating maximum value for the innovation for a target market. This session might be a good guide to develop a training module for student and other entrepreneurs.

### I-Corps

**Portland** 2:45 pm – 4:00 pm  
**Panel**

**All Things I-Corps. What You Need to Know!**

**Tara Loemis and Heath Naquin, VentureWell**  
**Lydia McClure, National Science Foundation**

Since 2012, the National Science Foundation (NSF)’s I-Corps program has become a hallmark of the government’s commitment to entrepreneurship and innovation. The I-Corps program is a featured component of President Obama’s Innovation and Technology Plan. To date, more than 650 teams from higher education institutions across the country have completed the program resulting in hundreds of startups created and millions of dollars of new activity in the national economy.

At the core of the I-Corps program are the faculty, students and institutions who provide the impetus and commitment to innovation nationally. This session will focus on various aspects of the NSF I-Corps Program from National Team creation to I-Corps Sites and Nodes across the U.S. Join us as we share best practices in all things I-Corps and share how you can join the National Innovation Program through this flagship science and technology initiative.

### The Startup Games: Build a business in a weekend

**Kimm Harris, University of Iowa**

The Startup Games uses gamification and experiential learning to create student engagement and impact with engineers, business majors and liberal arts students. Interdisciplinary teams from across the university learn problem solving, team building, innovation, and how to think like entrepreneurs/intrapreneurs as they create real businesses.

### The tools provided can be repurposed for participants’ own use.
The Startup: An exciting approach for student entrepreneurs and mentors
Matt Gibson, Tom Frank, Sarah Bachleda and Christine Gordon, University of Michigan, Ann Arbor

The Startup is an exciting blend of competition and co-curricular mentorship developed to provide meaningful engagement for students with external mentors. This semester-long program provides students with educational resources and guidance to move their ventures forward while simultaneously motivating them with the drive of a competition. All startups were matched with one of four local venture capitalists or entrepreneur/CEO mentors to advise them. This competition was designed to bring students the most value for their hard work by directing their attention to what they needed most to succeed with their businesses. Students were given specific milestone-focused challenges modeled on the Lean LaunchPad methodology, and several teams were eliminated at each round of the competition. Mentors effectively competed against each other as well in an effort to make their own team the winner, and were therefore deeply motivated to engage with their student teams to help them succeed.

Weekend Design Challenge
José Lugo and Moí Rosita Ramos, University of Puerto Rico at Mayaguez

The Weekend Design Challenge is the kick-off event for e-teams participating in the New Venture Design Experience at the University of Puerto Rico-Mayaguez. In it, students learn through workshops and other activities the human-centered design methodology and other entrepreneurial tools like the business canvas, embedded in a design competition. A total of 50 students from multiple disciplines participated, working in the design challenge of improving people's morning experience, which provided a theme for all the workshops and activities. The students with previous business ideas or product prototypes learned tools that they can now use in their own entrepreneurial activities. Other institutions can learn from the Weekend Design Challenge to embed teaching within design entrepreneurship and innovation competitions.

Entrepreneurial Product Design and Marketing: A student design competition focusing on market feasibility
Michael Caston, Metropolitan State University of Denver

With a high percentage of products failing in the marketplace within a short period of time, it is essential that students learn to determine market feasibility and incorporate this research into their design process while developing new products. A senior-level industrial design course is redesigned to include a strong emphasis on market research. Before a new concept is designed or prototyped, market demand is established that validates the need for the product and begins to define the overall design of the product including the features and benefits. This real-world design approach will ultimately increase the potential success of the product in the marketplace. Backed with substantial data-driven research, students pitch their innovative concepts as a final presentation to a large panel of judges made up of successful, high profile community entrepreneurs, engineers, industrial designers, academicians, and venture capitalists to garner real-world feedback before students proceed with their ventures.

Program Models
Salon H
2:45 pm – 4:00 pm
Open Minis

Building Upon the “Invention Factory” Model
Alan Wolf and Eric Lima, Cooper Union for the Advancement of Science and Art

Invention Factory is an intensive, extracurricular, six-week summer program in which students conceive of an invention, research prior art to ensure patentability, prototype the invention, and refine their prototype by presenting it to diverse audiences of guest evaluators each week. Participants write and file provisional patent applications for their inventions and compete for cash prizes. Participants report greatly increased self-confidence in inventing and improved skills in building, public speaking, project management and technical writing. A number of inventions created in Invention Factory have begun to move forward commercially. Our vision is a network of Invention Factories across multiple institutions (and perhaps disciplines), including all-female instances of the program. Scaling Invention Factory from one or two institutions to a large number of institutions presents challenges and opportunities.

Engaging Student Leaders to Create a Sustainable Culture of Innovation on Campus
Landon Young and Keill Schutte, William Jewell College

Our team will present on how we have engaged student leaders on campus to infuse creativity and innovation into the campus culture. William Jewell has utilized an interdisciplinary team of students to identify opportunities on campus, recruit and motivate students and initiate innovation in programs, curriculum and campus culture. Sharing Jewell's story will allow other campuses to gain insights into how to move innovation forward on a campus through student and faculty partnerships.

Focus on Communication and Design Thinking for a Multi-discipline Capstone Course
Catherine Myers, University of Portland

Communication methods and tools from lean design intersect with the overall design process to assist multi-discipline senior project teams in being successful with their projects. Teams develop an A3 report and create updates using an A3 status report, and provide weekly check-ins that follow a commitment-based approach. Information on the project plans is informed by discussion of the design process beginning with Problem Definition and Concept Development. This information provides an approach to organizing work done by multi-discipline teams using successful industry methods.

Works in Progress: The social mechanism of supporting entrepreneurial projects beyond the classroom
Alex Zorychta and Elizabeth Pyle, University of Virginia

We all know it's hard to teach entrepreneurship. As you scale up your efforts to institutionalize the curriculum, the entire process becomes less personal and individualized. However, at the heart of entrepreneurship is a core ideal of individualism, and the largest successes are due to serendipitous accidents and personal connections. It's about collisions and people density of people. Paul Graham has rebutted the claim that student entrepreneurship is even feasible. Indeed, “student” and “entrepreneur” are full-time jobs; being both means tradeoffs, and there's little outside time. At UVA's Works in Progress, our approach centers around the Mastermind Principle made famous by Napoleon Hill, which is based off of the idea that you’re the average of the five people with which you spend the most time. We have a built a community of solitude founders, the most useful resource for student entrepreneurs, and I'd like to share with everyone our insights.
When and When Not to Co-create? Effective co-design in BoP markets

Eric Reynolds and Argali Satrty, Massachusetts Institute of Technology
Marcella Arango, Minka-Dev

Panelists will present a definition of co-creation—a spectrum ranging from human-centered design to co-design to user-generated design; a case example of co-creation as a beneficial design tool; a counter example of co-creation leading to poor outcomes; and a summary of the precursors that appear necessary for effective co-creation in BoP markets. We expect the presentation to be insightful and provocative, especially for educators, inventors, entrepreneurs and other business leaders offering new products or services in BoP markets.

Seven Elements to Boost Motivation and Curiosity In and Out of Class

Margaret Vigliant, Charles Kim, Joseph Tranquille and Erin Jablonski, Bucknell University
Rick Reynolds, Engaging Every Student

This workshop focuses on seven course attributes that our work has demonstrated to support students’ intrinsic motivation and situational curiosity, key elements of the entrepreneurial mindset (EM). The elements are:

1. The class is voluntary;
2. Students create a physical artifact;
3. Student work is motivated by real problems;
4. Students apply broad perspectives to their work;
5. An open-process is applied to create solutions;
6. The course contains an interdisciplinary mix of students;
7. The number of students in the class is small.

We will present data supporting these elements’ impact on motivation and curiosity, as well as give concrete examples of their use in the college, K-12, and immersive experiences. We will spend the majority of the time engaging the participants in a discussion of how these elements may be worked into any course or program of interest. This work has been supported, in part, by KEEN.

Towards Increasing the Number of Innovation and Entrepreneurship Faculty Mavericks: Enhancing the traditional faculty work model

Beshoy Morkos, Chiradeep Sen, Abram Walton and Darrel Sandall, Florida Institute of Technology
Paul Stanfield and John Kelly, North Carolina Agricultural and Technical State University
Mark Mondry, Colorado School of Mines
David Brookstein, Temple University
Alan Eberhardt and Molly Waske, University of Alabama at Birmingham

Historically, faculty members in higher education institutions are evaluated, promoted, and granted tenure for successfully providing a mixture of quality teaching, impactful research publications, and service/engagement within and beyond the boundaries of their institutions. A growing body of research has shown that faculty who embody and incorporate an entrepreneurial mindset within their approach to research, discovery, pedagogy, and engagement have benefited from more successful grantmanship outcomes, more impactful research outcomes, and stronger industry and interdisciplinary collaborations. Faculty from several institutions have implemented a variety of methods to successfully work across multiple disciplines while employing an innovative and entrepreneurial mindset in order to more successfully enhance their teaching and research endeavors. Join our faculty panelists to discuss both successful and not-so-successful stories of champions from multiple universities who will share recommendations on how to stimulate an entrepreneurial mindset at your institution.

Breaking Traditional Faculty-Student Relationships to Encourage Entrepreneurship and Innovation Across Campus

Marsha Wender Timmerman and Steve Mellick, La Salle University

Through La Salle’s support and subscription to VentureWell’s University Innovation Fellows program, we have learned that students embrace creative freedom and have a deep desire to be entrepreneurial thinkers; this process doesn’t necessarily require direct involvement of faculty. Prior to and during the opening of our new makerspace (Innovation Factory), students self-organized to create a grass-roots movement to awaken the entrepreneurial spirit across the university. This, after years of faculty-led workshops, promotional activity, solicitations and encouragements, has reached significant traction, with students arriving daily to explore new ideas and opportunities, working together with other students. Another mechanism to encourage student leadership is to partner with extracurricular organizations such as Enactus. Faculty maintain an important role to ensure safety, educational direction and mentoring support, but releasing control over programming and even minor budgetary decision-making has yielded unexpectedly high levels of activity and interest.

Incorporating the Entrepreneurial Mindset into a Civil Engineering Curriculum

John Tocco, Lawrence Technological University

Because various engineering disciplines design salable products in their courses, undergraduate students are able to acquire entrepreneurial skills. Civil engineering courses, however, focus on designing systems, such as structural steel frames, that are difficult to use as prototypes for marketing to customers. In conjunction with a Kern Entrepreneurial Engineering Network workshop on Entrepreneurially Minded Learning, a module for a project management course was developed to provide civil engineering students with an opportunity to generate and potentially market a template for an asset management plan. A combination of pedagogical topic delivery tactics were employed to create a more customer-focused assignment, including classroom flipping by presenting the introductory lectures online, and hosting practitioner guest speakers to provide the client and consultant perspectives. The assignment write-up and attendant rubric specifically address both the technical approach to asset management and the entrepreneurial aspects of providing such a service to a client.

Experiential Learning: The key to supporting entrepreneurs in energy

Tiffany McNamara, Case Western Reserve University

We recently developed a pilot course in Energy, Engineering and Entrepreneurship. Our goal was simple: provide insight on the energy market, identify opportunities or challenges and leverage the use of the Business Model Canvas to create a start-up. While the course was deemed a success, something was missing. Student entrepreneurs lacked sufficient experience in energy to accelerate a successful start-up. Our solution: ThinkEnergy, a one-year fellowship that incorporates energy research, energy courses, energy internships and entrepreneurship. In this Open Mini we will walk you through why tools and courses designed for success in Silicon Valley aren’t universal and how experiential learning is one potential solution.
Program Models
Salon B
4:15 pm – 5:30 pm
Open Minis

Tools for Innovation & Entrepreneurial Success in the Community College
Philip Loew, NYC Regional Innovation Node
John Blanche, City College of New York (CUNY)
Christina Mooney, CUNY’s Queensborough Community College

Can you build an ecosystem of change and entrepreneurship at your institution? Everyone is capable of facilitating change. This presentation is designed to provide participants with the tools to implement, adapt and scale an entrepreneurship program. Our program, Tools for Innovation & Entrepreneurial Success (TIES) in the Community College, provides entrepreneurs a mentored pathway to success. TIES creates vital mentorship linkages along with ideation and hands-on critical skill development to assist students in becoming life-long entrepreneurs.

TIES incorporates the pedagogical practices of the I- Corps™ curriculum and helps community college students develop skills while fostering an entrepreneurial spirit. The program’s evolution, challenges, and outcomes provide a framework for training entrepreneurs at community colleges.

I&E Principles as a Context for Engineering Professional Skills Development
David Feinauer, Norwich University

One approach to a first-year engineering course for students from a variety of disciplines is to target the course at developing skills and principles that transcend the fields, recognizing engineering as a general subject area instead of focusing on a sampling of narrow topics from each discipline. Hallmarks of engineering as a field of study include the application of problem-solving and design processes based on observation and modeling of behavior grounded in knowledge of science principles to address societal needs. As a context for practicing and developing these and other professional competencies, a product-based innovation project incorporating tools and techniques from the areas of engineering design and innovation and entrepreneurship (I&E) was developed. Details on the integration and application of exercises related to: idea generation, customer understanding and empathy, down-selection, and an innovation canvas will be used to seed discussions on applying I&E principles to engineering courses.

From Design to Entrepreneurship: Creat(ive) opportunity
Corey Saft, University of Louisiana at Lafayette

We explore outcomes of an innovative university pop-up class that structures the play-based working methods of design studio with the focused, market-driven persistence of an entrepreneurial mindset. We highlight the real-world social potential of creative play, often valued as innovation, in practice, which in the context of student engineering education, and the broader context of the professional engineering economy. The approach challenges the idea that designer as active agent of change for their community, the market and place across the globe. The cross-disciplinary, no fee/no credit class was structured in three sessions spread across the fall semester.

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Salon H
4:15 pm – 5:30 pm
Open Minis

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Inventor’s Studio @ Rensselaer: Theory, tools, processes and practice
Ashish Ghosh, Rensselaer Polytechnic Institute

This Open Mini will provide an overview of Inventor’s Studio @ Rensselaer, conceived and taught by Burt Swersey and now being taught by Ashish Ghosh. Funding for developing this course was provided by VentureWell. Attendees will learn how students gain the tools and processes for innovation and experience in innovating. We will review the theory, tools, processes and templates used in the course.

Education of Engineering and Business Students for the 21st Century: A paradigm shift
Matthew Franchetti, University of Toledo

I will present a curriculum and the associated outcomes that involved the integration of freshman through senior level engineering and business courses at the University of Toledo, funded by a VentureWell grant. The presentation will demonstrate the enhancements and connections of three existing engineering design and three existing business courses that will create new-age engineers and entrepreneurs. This pedagogy is novel and transformative: few engineering programs in the US combine engineering students and business students early in their academic careers to expose them to the much-needed entrepreneurial mindset, as compared to the current approach of waiting until senior year. These courses were co-taught by business and engineering faculty.

Financial Support for Student Startups: Raising and managing capacity funds for university social entrepreneurship courses and accelerators
Ryan Singh, University of Illinois Urbana-Champaign

To support our three-stage curricular and co-curricular pipeline for social venturing, we’ve raised nearly $150,000 in capacity funding to provide seed funding to help our teams gain capabilities that help them achieve venture milestones. This is all done by application, and we’ve developed and managed a process that ensures seed funding is distributed in alignment with achieving core values. Input in this process is provided by our pipeline team of staff and faculty, and also by advisors and coaches of teams. This capacity funding process has increased access to the number of students that can participate in entrepreneurship at our university, and provided meaningful seed capital to help our student teams prototype products, pilot projects, conduct market research, travel to conferences, and more. This discussion will share strategy, tools, and case examples of our currucul and accelerator capacity funds.

Online Certificate in Social Innovation: Enabling diverse students to go from “I care” to “I can”
Jason Greene, Portland State University

Designing sustainable solutions for the complex problems we face requires involvement from diverse disciplines and well-prepared leaders. However, impact-focused entrepreneurs often work in isolation and with little preparation. Launched in 2014, the Portland State University Social Innovation and Social Entrepreneurship Certificate is a majority online, experiential program open to people of all ages and locations united by the same passion for positive change. Undergraduates, graduates, and members of the community from diverse disciplines, and even geographic areas, attend the same courses together. Unfettered by space and time, students benefit from “constructive collisions” and emerge from the silos of age, discipline, and culture to explore complex issues in solidarity. With guidance from faculty and social entrepreneurship practitioners, they develop individual social enterprise concepts by acquiring skills in design thinking and business planning, and build their self-awareness and emotional intelligence to change systems for the benefit of humanity and the planet.
Quick Impact: An on-campus “Build Day” to increase awareness, involvement, and understanding at the global level
Laura Hrosmy, California Polytechnic State University, San Luis Obispo
This presentation highlights a hands-on event that was leveraged to achieve several objectives. In this case, an on-campus Digital Solar Library Build Day was held to foster among students: a greater understanding of developing world context, challenges, and socio-political realities; improved awareness of entrepreneurial approaches in using appropriate technologies to meet real needs; and increasing participation in the solar digital library project. The library build was sandwiched between two interactive presentations that emphasized entrepreneurship with locally appropriate technology, and comprehending and respecting local context. These were designed to get students thinking and talking before, during, and after the build, while the build itself provided the opportunity to contribute tangibly to an ongoing in-the-field project. This talk should inspire others with ideas for how to raise awareness and involvement of students in innovative projects, as well as how to emphasize both local context and hands-on experience in a quick-win event.

Teaching Social Entrepreneurship through a MOOC Format
Jeffery Plumblee, Dylan Bargar, Claire Dancz, Leidy Klotz, and Amy Landis, Clemson University
This presentation describes a uniquely formatted course that teaches students the basics of sustainable design, the design process, and introductory business principles through a series of six structured themes. In tandem with learning these concepts, students work collaboratively in teams to address a societal challenge of their choosing. Learning outcomes are achieved through the combination of shared attributes of xMOOCs and cMOOCs in an active learning environment. The course combines the connectivity of a cMOOC with the structure of an xMOOC. This provides the structured foundation and common ground for students to acquire technical skills, but allows the flexibility for the students to build collaboratively in a direction that is most engaging to them while obtaining a deep understanding of the topic. The course described is not designed for success in spite of diversity of thought; this course is designed for success because of diversity of thought.
**OPEN 2016 POSTER PRESENTATIONS**

**Academic Maker Spaces 101: How to Successfully Get from Concept to Steady-State (Pre-registration required)**

Maker spaces are popping up on campuses everywhere. If you’re early in the process of setting one up, or contemplating expanding your maker space presence, join us on Sunday, one day after the main VentureWell conference, for this workshop. We’ll give you the nitty-gritty details you need, including floor plans, machines, safety, staffing, funding and growing a maker space culture on your campus.

Presenters for the workshop are Marty Culpepper (MIT maker space czar) and Craig Forest (founder of GA Tech Invention Studio). They will share best practices and insights from their forthcoming report and book.

The objectives of the workshop are to (1) cover the most common questions surrounding the ‘how to’ of creating maker spaces, (2) review the ‘dos and don’ts’ of academic maker spaces, (3) discuss different models for maker spaces and the issues they address, (4) examine example models for staffing, management and planning, and (5) discuss how to create safe spaces while expanding student access and fostering community and student ownership. The concepts and ideas discussed in this workshop are complemented by many examples from existing successful maker spaces, most of which come through the Academic Maker Space Working Group.

**WORKSHOP SPONSOR**

Herman Miller

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**SATURDAY, MARCH 5**

**OPEN 2016 POSTER PRESENTATIONS**

**Applying Lean Startup Methods and Principles Applied to a Benefit Corporation**

Tran K. Nguyen, Berea College

Tech Connect

Andrew Maxwell, York University
Robert McNamee, Temple University

Creating a Certificate in Technology Entrepreneurship

Andrew Maxwell, York University

Crowdfunding

Scott McIntyre, University of Toledo

Toward a Global Open-sourced, Action-oriented & Cross-disciplinary Approach to I&E of Open Data in HBCUs & the Black Diaspora

Umaru Bah and Omar Muhammad, Morgan State University

Three-course Sequence in Medical Device Commercialization

Olivia Colado, University of Portland

Calling All Failures

Jean Shipman, University of Utah

American, Chinese, or Zambian? Which Products Do You Prefer?

Leah Bader and Sara Warnquist, Pennsylvania State University

I Dream Of...A Product Characterization Lab

Nick Frazier, Pennsylvania State University

SAFE NIÑOS: Designing Innovative Interactive Environments for Pediatric Healing

Penny Herscovitch, ArtCenter College of Design

Teaching Design: Creating the Foundation

Daniel Sullivan, University of Massachusetts Lowell

A Three-stage, Two-year Pipeline for Social Entrepreneurship Education and Venture Acceleration

Ryan Singh, University of Illinois Urbana-Champaign

StartUpTrackerTexas: A Web Portal for Seed-Funding Programs

David Novick, The University of Texas at El Paso

UC San Diego Maker Space

Nathan Delson, University of California, San Diego

A Course to Experience Medical Device Design: From Business Evaluation to Engineering Design

Lourdes Medina, University of Puerto Rico Mayaguez Campus

Collaborative Learning and Doing Communities

John Lovitt, Bonnie Bachman and Sajal Das, Missouri University of Science and Technology

A Clinical Immersion at Disciplinary Interfaces Course: Bringing Nurses and Engineers Together for Innovation with Impact

Melissa Geist and Robby Sanders, Tennessee Technological University

Digital Learning R&D: Using Design Thinking to Test & Validate the Liberal Arts

Hannah Levinson, Davidson College

Physics Resources Supporting Innovation Teams

Randall Tagg, University of Colorado Denver

The Innovation Vault: Advice at Your Fingertips

Barbara Ulmer, University of Utah

New Venture Creation Teaching

Jeremy Vickers, University of Texas at Dallas

Responding to Real Time, Real World Problems through Transdisciplinary Collaboration: The Five by Five (Five Ideas, Five Minutes, Five Slides, Five Judges, $5,000)

Lori Houghton-Rahrig, Grand Valley State University

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**SUNDAY 9:00 am - 3:00 pm**

**Academic Maker Spaces 101: How to Successfully Get from Concept to Steady-State (Pre-registration required)**

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OPEN 2016 POSTER PRESENTATIONS

Combining Experiential Learning with Expert Knowledge: A Novel Platform for the Design Process
Christopher Chermside-Scabbo, Washington University in St. Louis

Inclusion through Textiles: Creating a Pathway to and through STEM
Sarah Kuhn, University of Massachusetts Lowell

DifferenceMaker: Innovation that Matters
Holly Butler, University of Massachusetts Lowell

What Helps Mentoring Thrive?
Thomas Jensen, Enterprise Futures Network

Developing Entrepreneurial Mindsets From Freshman to Seniors
Magdalini Lagoudas, Texas A&M University

Using National Competitions as Focus for Interdisciplinary Innovation and Entrepreneurship Education
Howard Davis, Washington State University

OPEN 2016 POSTER PRESENTATIONS

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For presenter bios, conference papers and more, visit venturewell.org/open.
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VentureWell fosters new ventures from an emerging generation of inventors and supports the innovation and entrepreneurship ecosystems that are critical to their success.

Learn more and sign up for our newsletter at Venturewell.org.

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e-teams

VentureWell’s E-Team Program cultivates opportunities for innovators to move ideas out of the lab and into the marketplace.

Students, faculty and industry mentors work together on our E-Teams—or “Entrepreneurship Teams”—to bring ground-breaking inventions in science, tech and engineering to market.

Combining early-stage funding of up to $25,000 with workshops, expert coaching, and investment opportunities, we give collegiate entrepreneurs the tools they need to turn their ideas into thriving ventures.

Next Deadline: May 4, 2016

Learn more at venturewell.org/student-grants

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2015–16 E-TEAM PROGRAM
accelerating technology invention & innovation for scalable impact

**STAGE 1**
$5,000 grant funding
50 teams
Market analysis, value proposition development

**STAGE 2**
$20,000 grant funding
20 teams
Business model development, Coaching

**STAGE 3**
Sector-specific partnership and investment readiness training
10 teams

Learn more at venturewell.org/student-grants
Transform your classroom into an active entrepreneurial environment.
The Lean LaunchPad educators seminar teaches you how to integrate Lean Startup principles into your curriculum. Developed by Steve Blank, the Lean LaunchPad is a pedagogical framework for entrepreneurial education that helps students learn by doing. Learn more at venturewell.org/lean-launchpad

Get funding to pioneer new ways to engage students in innovation and entrepreneurship.
VentureWell grants of up to $30,000 challenge faculty to create new courses and programs in which students develop ideas and gain the skills to bring them to market. Learn more at venturewell.org/facultygrants

$65,000 in prizes for undergraduate biomedical engineering students.
A joint project of The National Institute of Biomedical Imaging and Bioengineering (NIBIB) and VentureWell, the Design by Biomedical Undergraduate Teams (DEBUT) competition challenges teams of undergraduate students in biomedical engineering programs to solve real world problems in healthcare. Next Deadline: May 30, 2016 Learn more at venturewell.org/students/debut

Up to $10,000 for biomedical university students.
VentureWell's BMEidea competition challenges university biomedical entrepreneurs to pioneer a health-related technology that addresses a real clinical need. Next Deadline: April 6, 2016 Learn more at venturewell.org/students/bmeidea
Get $50K to test your idea for commercialization

The NSF I-Corps™ grant and training opportunity is targeted toward transforming the next generation of science & technology entrepreneurs from universities across the US. Presented in collaboration with VentureWell, NSF I-Corps™ offers selected participants $50,000 in grant funds and an intensive 7-week course to help develop their idea for commercialization.

7 WEEK COURSE

Multi-Day Workshop
Online Learning
Multi-Day Workshop

Participants leave program with:
• New Skills & Knowledge
• Discover Product-Market Fit
• Understanding of use-inspired research

Learn more at the “All Things I-Corps” session, Saturday at 2:45pm, or online at venturewell.org/i-corps
Autodesk® Fusion 360™
For the Future of Making Things

Autodesk® Fusion 360™ makes it easy for students and teams to work together on an integrated design, engineering and fabrication platform, virtually anywhere, on any device.

1 Integrated design tool
Everything you need for design, engineering, fabrication and collaboration on a single platform—making data disconnect and rework a thing of the past.

2 Flexible modeling environment
Fusion 360 includes flexible, real-time direct modeling and feature-based parametric modeling, allowing you to design the way that suits you best.

3 Built for collaboration
Work with your class or team from one central project dashboard—accessible virtually anytime, anywhere. Maintain design control by choosing who can view, comment, and edit.

4 Automated data management
Always work on the latest model with automated data management, and version controls. Integrated search makes it easy to find components in complex designs and simply design re-use.

5 Modern development cycles
Prepare your designs for machining with integrated CAM capabilities. You can also use the 3D printing utility for additive manufacturing and rapid prototyping.

6 File translation, import & export
Import and export design files with a comprehensive set of CAD data translators, with support for more than 50 different file types.

7 3D rendering and visualization
Communicate design intent and create photo realistic marketing materials directly from your model for your portfolio. Speed up the process by pre-rendering in the cloud.

8 Online or offline access across devices
Fusion 360 is available on a Mac, PC, or mobile—online and offline. This allows you and your team to access design virtually anywhere, on any device.

9 Always up to date
The development team delivers on functionality requests every 6-8 weeks. Being cloud-based, means your software is always up to date with the latest features.

10 Vibrant community
Engage with a community of like-minded peers and the Fusion 360 product team through our forums, gallery, webinars, and meet-ups.

Students get free* access Autodesk Fusion 360 software. Learn more: www.autodesk.com/fusion360-students

*Free Autodesk software and/or cloud-based services are subject to acceptance of and compliance with the terms and conditions of the software license agreement or terms of service that accompany such software or cloud-based services. Software and cloud-based services provided without charge to Education Community members may be used solely for purposes directly related to learning, teaching, training, research or development and shall not be used for commercial, professional or any other for-profit purposes. To participate in the Autodesk Education Community, you must be age 13 or older, agree to and comply with the applicable Terms of Use and also satisfy all eligibility requirements, including being one of the following: (a) a faculty member; or (b) a student; or (c) an Autodesk sponsored design competition competitor or mentor. Autodesk, the Autodesk logo, and Fusion 360 are registered trademarks or trademarks of Autodesk, Inc., and/or its subsidiaries and/or affiliates in the USA and/or other countries. All other brand names, product names, or trademarks belong to their respective holders. Autodesk reserves the right to alter product and services offerings, and specifications and pricing at any time without notice, and is not responsible for typographical or graphical errors that may appear in this document. © 2015 Autodesk, Inc. All rights reserved. Mac is a trademark of Apple, Inc., registered in the U.S. and other countries.
Creating a Community on Campus

Higher education is changing. As campus leaders continue to develop their vision for the future of teaching and learning while growing in their understanding of the impact that changes in education will have on the physical campus, institutions require a new approach to the design of learning spaces.

At Herman Miller, we help institutions transform campuses into communities that draw students and faculty together and help them do their best.

Learn more at hermanmiller.com/education