EER&I Networking Session

Connecting and Expanding the Engineering Education Research & Innovation (EER&I) Communities

ASEE Annual Conference – June 28, 2016 – T459A – 1:15 pm – 2:45 pm

Facilitated By

Karl A. Smith
Purdue University and
University of Minnesota

Ruth A. Streveler
Purdue University

Rocio Chavela Guerra
American Society for
Engineering Education

Agenda

Introduction of session and facilitators **10 min**

Brief reports on status of EER&I **35 min**

- Update on EER initiatives – Ruth Streveler
- Update on EEI initiatives – Rocio Chavela-Guerra
- Other Updates
- Update on new Departments with EER PhD programs
- Update by David Radcliffe, Head, School of Engineering Education, Purdue University

Participant Networking **35 min**

- Rapid introductions around guided questions – Four to five conversations in groups of 3 – as a way to meet many people
- Identification of “intellectual neighborhoods” around research and innovation questions and opportunities – individual reflection and writing

Brainstorming on strategies to connect, expand, and sustain the emerging EER and EEI communities **10 min**

- Summary of ideas for (a) local, (b) national – conferences, etc. and (c) virtual community
- Individuals share reflections with the large group, facilitators sum up the session and participants complete feedback forms

Agenda

Brief reports on status of EER&I **35 min**

- Update on EER initiatives – Ruth Streveler
- Update on EEI initiatives – Rocio Chavela-Guerra
- Other Updates
  - National Academy of Engineering – Beth Cady
  - Association of Public and Land-Grant Universities – Network of STEM Education Centers – Kacy Redd
  - Engineering Education Community Resource – Ken Yasuhara & Adam Carberry
  - EER Research Resources – Amy VanEpps
- Update on new Departments with EER PhD programs
  - Arizona State University – Ann McKenna
  - University of Michigan – Cindy Finelli
  - Ohio State University – Monica Cox
- Update by David Radcliffe, Head, School of Engineering Education, Purdue University

RIGOROUS RESEARCH in ENGINEERING EDUCATION

Funded by the National Science Foundation through awards DUE 0341127 and DUE 0817461

Rigorous Research in Engineering Education (RREE)

ASEE EER&I Networking Session

June 28, 2016

Update

- Ongoing research about the long-term impact of RREE
  - ASEE paper *Voicing the indescribable: Using photoelicitation as a method to uncover belonging and community (Session M514C)*
- Resources
  - CLEERhub has moved
  - https://stemedhub.org/groups/cleerhub
  - Googling CLEERhub will take you to this site!
- New space for to build methods and theories in EER
  - https://ruthstreveler.wordpress.com/engineering-education-research/ [link from Purdue ENE website]

RIGOROUS RESEARCH in ENGINEERING EDUCATION

Research to Practice

- **Neuroscience research in EER incorporated into teaching**
  - **Content, Assessment, Pedagogy**
    - **At Purdue**
    - **Other institutions - Skoltech**
  - **Neuroscience in Engineering Education Research**
    - **New course at Purdue Spring 2017**
  - **Industry workshops**
    - **How People Learn Engineering (Boeing)**

RIGOROUS RESEARCH in ENGINEERING EDUCATION

Discipline-Based Education Research (DBER)

National Research Council Summer 2012 – http://www.nap.edu/catalog.php?record_id=13362

LAST WORD — OPINION BY SUSAN SINGER & KARL SMITH

Follow the Evidence

Discipline-based education research dispels myths about learning and yields results – if only educators would use it.

Last year, the National Research Council released the report *Discipline-Based Education Research: Understanding and Improving Learning in Undergraduate Science and Engineering*. That consensus study, on which we served as committee members, brought together experts in physics, chemistry, biology, the geosciences, astronomy, and engineering, as well as higher education researchers, learning scientists, and cognitive scientists to focus on how students learn in particular scientific and engineering disciplines. Our key conclusion: Findings from the growing field of discipline-based education research (DBER) have yet to spur widespread changes in the teaching of science and engineering.

For example, research-based instructional approaches to teaching that actively engage students in their own learning, such as group projects, have been shown to be more effective than traditional lectures. Yet science and engineering faculty still cling to familiar practice. While there's no magic solution for adopting evidence-based teaching practices, finding out what is known about undergraduate learning in engineering and science—and identifying impediments to implementation in the classroom—can point the way.

First, many students have incorrect understanding about fundamental concepts—particularly phenomena that are not directly observable, such as those involving very large or small scales of time and space. Understanding how educators can help students change these misconceptions is in the early stages, but DBER has uncovered some effective instructional techniques. One promising approach is to use "bridging analogies" that link students' correct knowledge with the situation about which they harbor false beliefs. For instance, a student may not believe that a table can exert a force on a book resting on its surface but accepts the notion if a spring is placed under the same book. Linking these two ideas, with perhaps an intermediate of a book resting on a foam block, can move the student toward a correct understanding of forces.

STUDENTS ARE CHALLENGED BY KEY ASPECTS OF ENGINEERING AND SCIENCE THAT CAN SEEM EASY OR OBVIOUS TO EXPERTS.

Students also are challenged by important aspects of engineering and science that can seem easy or obvious to experts. When tackling a problem, for instance, students tend to focus on the superficial rather than on its deep structure. Instructors may have an "expert blind spot" and not recognize how different the student's approach is from their own, which can impede effective instruction. Several strategies appear to improve problem-solving skills, such as providing support and prompts—known as "scaffolding"—as students work their way through problems. Another common issue for students in all disciplines is difficulty in extracting information from graphs, models, and simulations. Using multiple representations in instruction is one way to move students toward expertise.

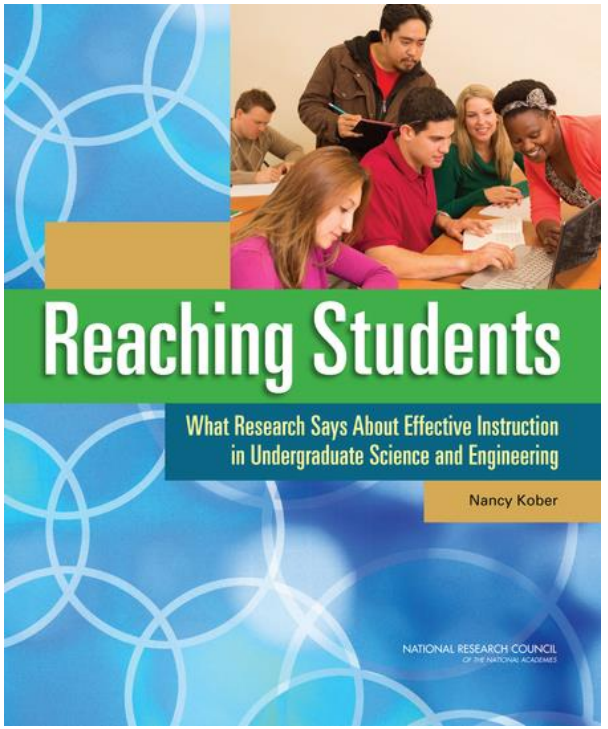
The report recommends future DBER research that explores similarities and differences in learning among various student populations, and longitudinal studies that shed additional light on how students acquire and retain an understanding (or misunderstanding) of concepts. However, we also need strategies that translate the findings of DBER and related research into practice. That includes finding ways around barriers, such as the faculty reward system, the relative value placed on teaching versus research, lack of support for faculty learning to use research-based practices, problems with student evaluations, and workload concerns.

The report urges universities, disciplinary organizations, and professional societies to support faculty efforts to use evidence-based teaching strategies in their classrooms. It also recommends collaboration to prepare future faculty members who understand research findings on learning and teaching and who value effective teaching as part of their career aspirations. By implementing these recommendations, engineering and science educators will make a major first step toward using DBER to improve their practice—and learning outcomes.

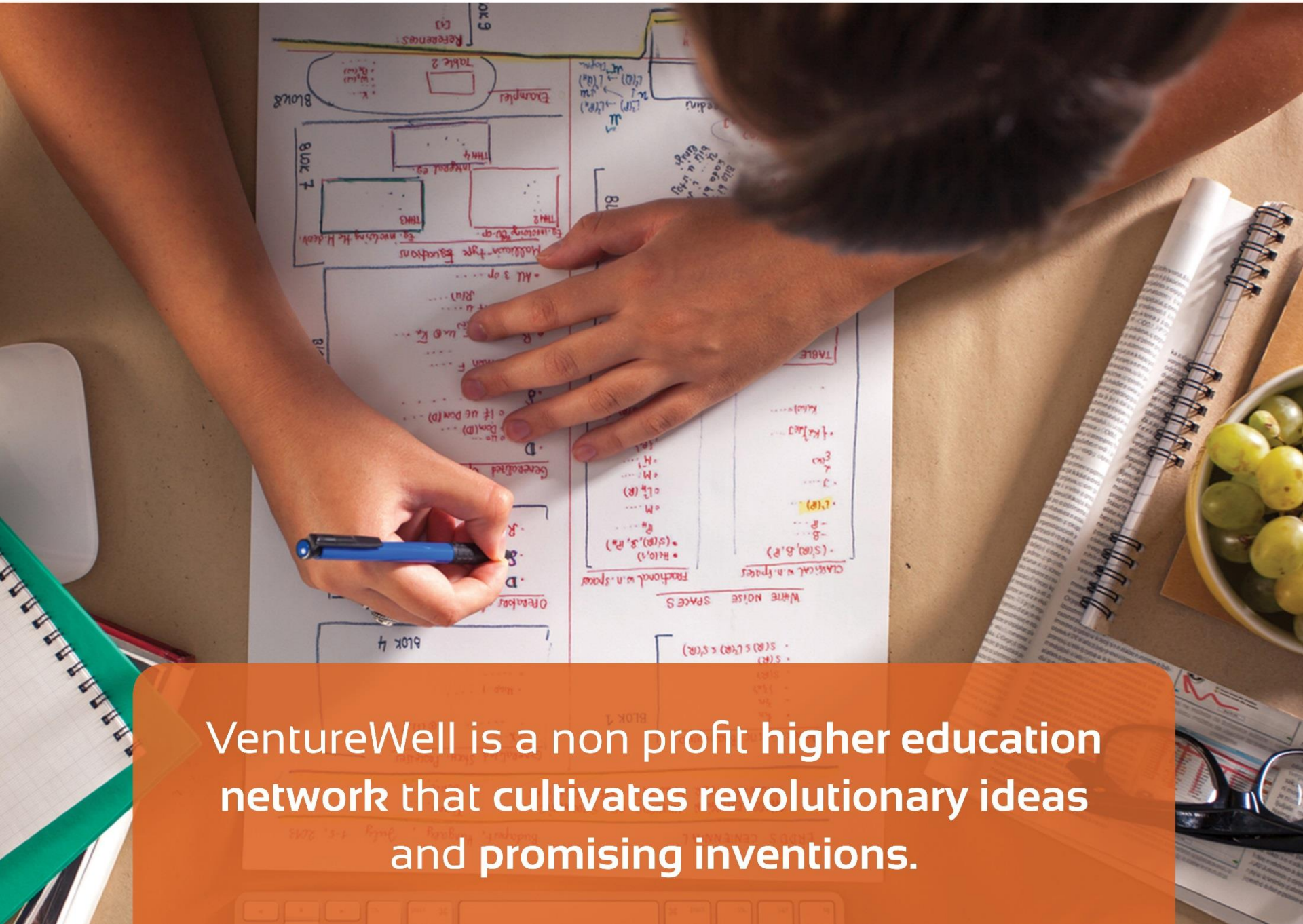
Susan Singer, the Laurence McKinley Gould Professor of the Natural Sciences at Carleton College, chaired the National Research Council committee that prepared the consensus study. Karl Smith, the Cooperative Learning Professor at Purdue University's School of Engineering Education and emeritus professor of civil engineering at the University of Minnesota, represented engineering on the committee. To view the report, visit http://www.nap.edu/

ASEE *Prism Summer 2013*

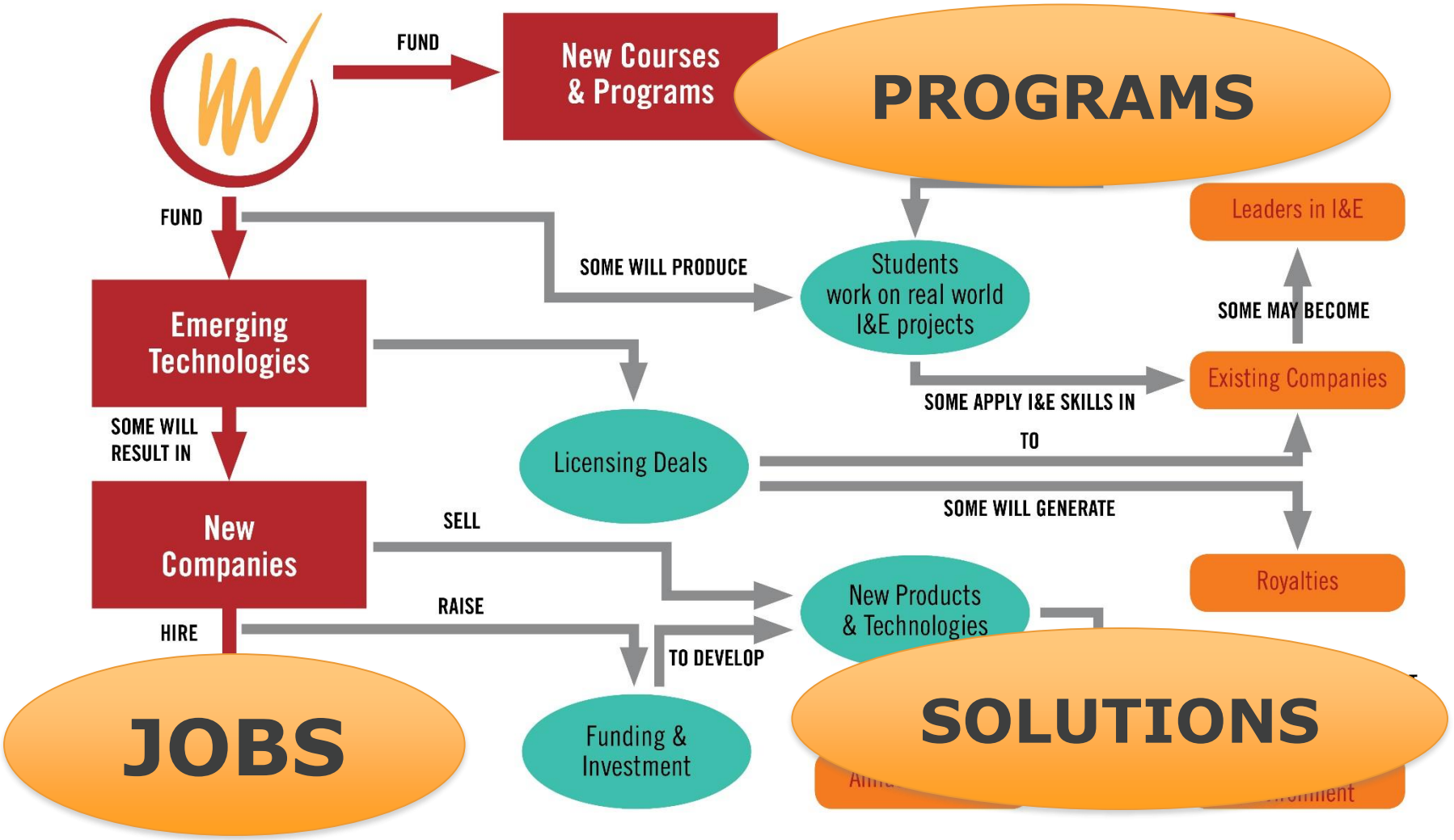
Journal of Engineering Education – October, 2013



National Research Council – 2015 http://www.nap.edu/catalog/18687/reaching-students-what-research-says-about-effective-instruction-in-undergraduate



VentureWell is a non profit **higher education network** that **cultivates revolutionary ideas** and **promising inventions.**

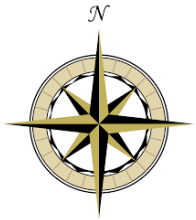

FUND
New Courses & Programs
PROGRAMS
FUND
SOME WILL PRODUCE
Students work on real world I&E projects
Leaders in I&E
SOME MAY BECOME
Emerging Technologies
SOME APPLY I&E SKILLS IN
Existing Companies
SOME WILL RESULT IN
Licensing Deals
TO
SOME WILL GENERATE
New Companies
SELL
Royalties
RAISE
New Products & Technologies
HIRE
TO DEVELOP
JOBS
Funding & Investment
SOLUTIONS

I-Corps™ for Learning

Evidence-based Entrepreneurship™ to Improve STEM Education

www.asee.org/i-corps-l

I-Corps™ L History



June 2013 **June 2014** **June 2015** **June 2016**

June 2013: Called to Serve

Jan-Feb 2014: Cohort 1 (Pilot)

Mar-Nov 2014: Redesign

Jan-Feb 2014: Cohort 2

Mar-May 2015: Redesign

Jul-Aug 2015: Cohort 3

Apr-Jun 2016: Redesign

Jul-Aug 2016: Cohort 4

The Growing Network of I-Corps™ L

- 3 Cohorts
- 54 Teams
- 175 Participants
- 15 Instructors
- 3 Evaluation Partners

Key Features of I-Corps™ L

- **I-Corps™ Model**
  - Curriculum (BMC, Customer Discovery & Agile Engineering)
  - Teams recruitment
- **Balanced Teaching Team**
  - I-Corps™ L Faculty
  - I-Corps™ Node Faculty
  - Entrepreneurs

- **Emphasis on Learning**
- **Syllabus Iterations**
- **Teams Composition**
- **Course-specific Outcomes**
- **Assessment Instruments**

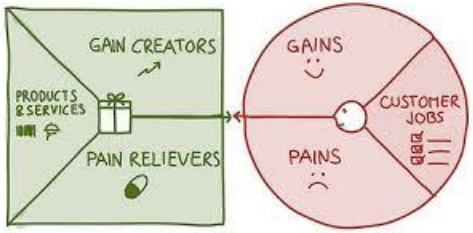
Team Name_____ Team #_____	TEAM DECISION		Go	No Go, But Continue	No Go
	TT REC		Go	No Go, But Continue	No Go
	Evidence of Criteria in Team's BMC				
Teaching Team criteria for a 'Go' decision:	None (1)	Poor (2)	Adequate (3)	Outstanding (4)	
1. Value propositions align with customer segments					
2. Evidence of champion (decision-maker) from at least one customer segment					
3. Specific and concrete definition of scale					
4. Credible path towards scaling and sustaining identified					

Value of the Investment

- Helps develop an **entrepreneurial/intrapreneurial mindset** of STEM educators/innovators

The Entrepreneurial Mindset

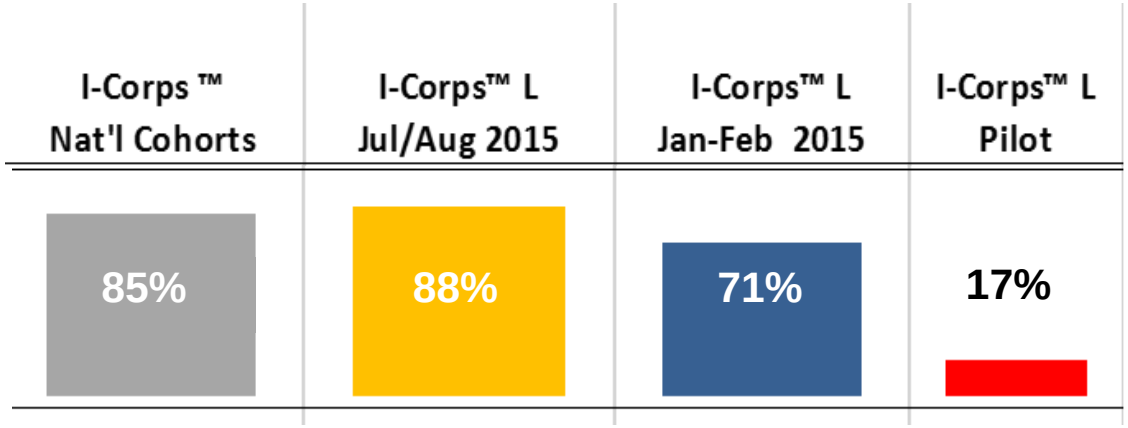
- Produces skills and awareness to align **Customer Segments and Value Propositions**



- Produces **valued outcomes** to participants' careers, research and teaching

Entrepreneurial/Intrapreneurial Mindset

Course increased my interest in starting a company*



*Agree and Strongly Agree

"My knowledge of business and entrepreneurship was extremely limited. Now, I am even thinking that I might consider a startup business."

– Principal Investigator

Outcomes: Teaching, Research, Career…

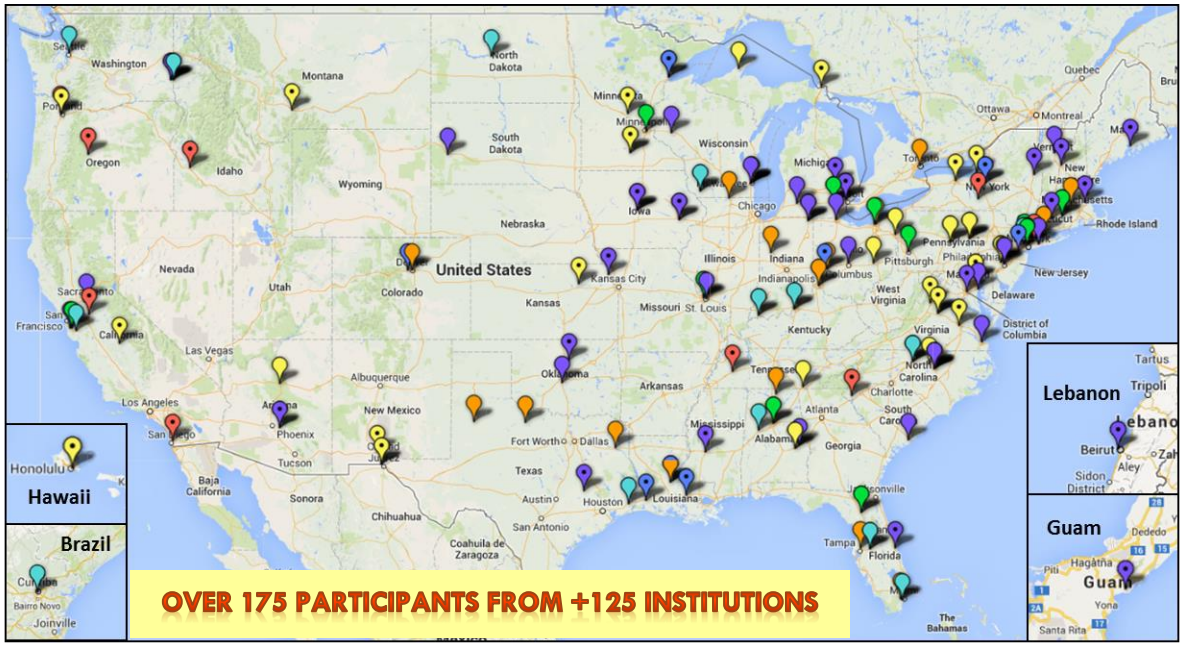
	I-Corps™ L Pilot	I-Corps™ L Jan-Feb 2015	I-Corps™ L Jul-Aug 2015	I-Corps™ Nat'l Cohorts	
I will use I-Corps™concepts in my teaching. (PIs)	76%	72%	82%	85%	Teaching
I will use I-Corps™concepts in my research. (PIs)	76%	77%	72%	83%	Research
I will use I-Corps™ concepts in my career. (all)	85%	88%	90%	95%	Career
I will use information from the I-Corps™ L course in designing future learning innovations. (EIs/PIs)	100%	95%	92%	not asked	Future Innovations
I will seek other funding for my innovation within the next 12 months. (PIs/ELs)	17%	49%	58%	80%	Funding

Next Steps

- **Upcoming Cohort: July-August 2016**

- **Sustaining and Scaling STEM Education Innovations for Broader Impact**
  - Increasing Awareness
  - Introduction to I-Corps™ L

- **Beyond I-Corps™ L**



CYCLE I: Electric Circuits · Mass and Energy Balance · Mechanics · Thermodynamics

CYCLE II: Electrical Engineering · Computer Science and Engineering · Mechanical Engineering · Civil Engineering · Chemical Engineering

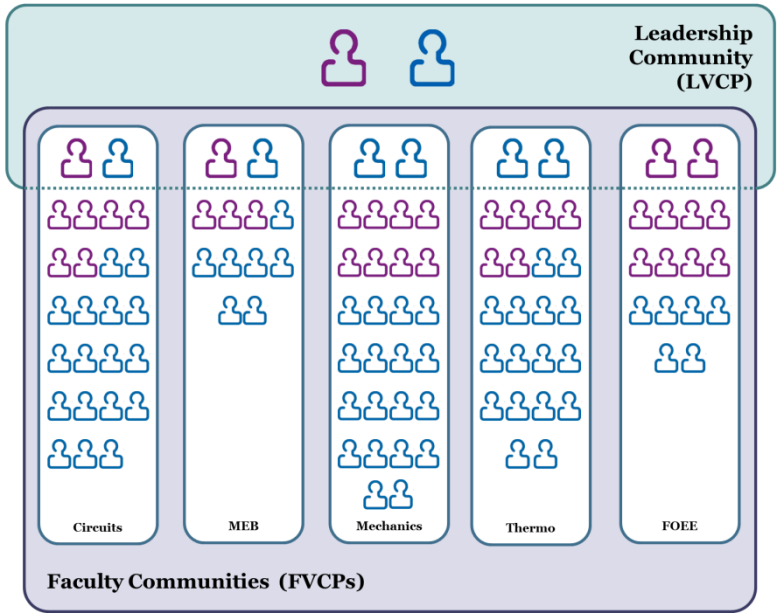
FACULTY DEVELOPMENT USING VIRTUAL COMMUNITIES OF PRACTICE

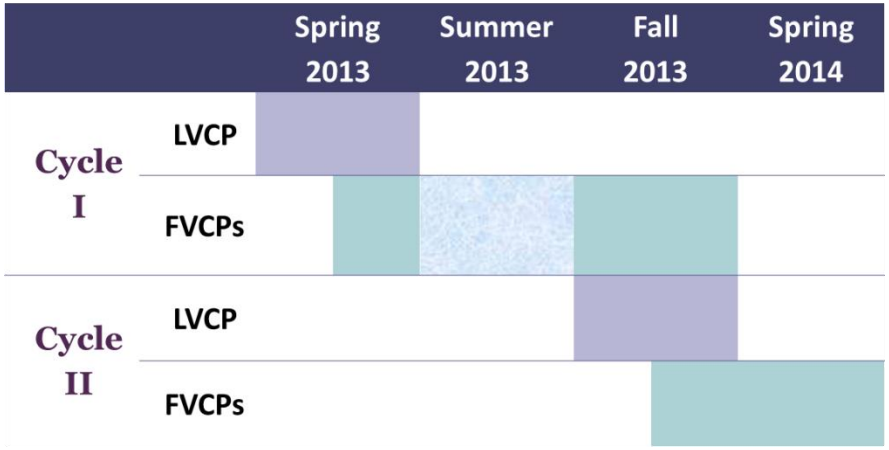
DUE-1224217

vcp.asee.org

VCP Model for Faculty Development

- Two-tier structure
  - **Leadership VCP**
  - **Faculty VCPs**
- Two preparation cycles
  - **Knowledge building phase**
  - **Practical phase**





ASEE ACTION ON DIVERSITY

PROMOTING LGBTQ EQUALITY IN STEM

- Leadership VCP
- Action VCP
- Safe Zone Workshops
- Campus Surveys
  - Deans
  - Faculty
  - Students

diversity.asee.org/lgbtq

EEC - 1539140

NATIONAL ACADEMY OF ENGINEERING

OF THE NATIONAL ACADEMIES

Engineering Education Research and Innovation Programs Update

Beth Cady, Program Officer, NAE
ecady@nae.edu

NAE EER&I Activities

- Frontiers of Engineering Education (https://www.naefoee.org/)
  - University engineering faculty members exchange ideas around the state of engineering education, analyze innovative practices, develop professional networks, and become change agents to make 21st century engineering education exciting, creative, rigorous, and engaging.
- LinkEngineering (http://linkengineering.org/)
  - Community of practice for educators, researchers, PD providers, pre-service educators, and administrators implementing engineering in preK-12 education
- The Engagement of Engineering Societies in Undergraduate Engineering Education (http://www.nae.edu/Projects/126089.aspx)
- Overcoming Challenges to Infusing Ethics into the Development of Engineers (http://www.nae.edu/Projects/CEES/57196/OvercomingChallenges.aspx)
- More information about these and other projects can be found at www.nae.edu.

NATIONAL ACADEMY OF ENGINEERING

NSEC
Network of STEM Education Centers

For more information contact the NSEC co-directors, Kacy Redd (kredd@aplu.org) and Noah Finkelstein (finkelsn@colorado.edu)

Network of STEM Education Centers (NSEC): *The network for supporting the transformation of undergraduate STEM education*

- National network of centers that focuses on undergraduate STEM education transformation within colleges and universities.
- Addresses calls from the White House (Olson & Riordan, 2012) and National Academies (Singer et al., 2012) for such multi-institutional / nation-wide approaches.
- Network currently links 149 STEM Education Centers (SEC) at 126 institutions (from 246 SECs at 182 institutions identified to date)
- Four year project (NSF #1524832). Original seed funding from the Alfred P. Sloan Foundation with support from APLU.

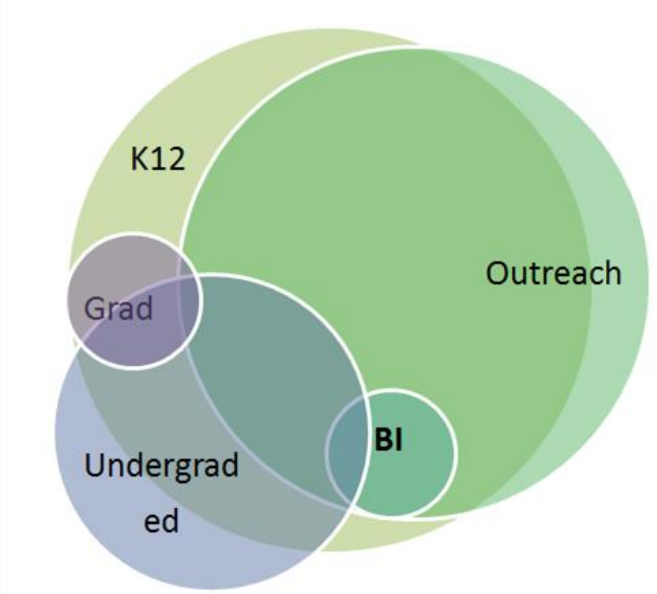
Association of Public & Land-grant Universities

Alfred P. Sloan Foundation

NSF

STEM Education Center types in the network

- Hubs of campus efforts leading transformation of undergraduate STEM education, including STEM learning experience for students, broadening participation, understanding teaching and learning, broadening the impact of campus research, and supporting national and regional scale improvement in STEM education
- Large variety in the structure and identity of STEM Education Centers
- Overlapping goals of improving undergraduate and grad ed, teacher prep, outreach, broader impacts
- Often housed within CoS, CoE, or under Provost



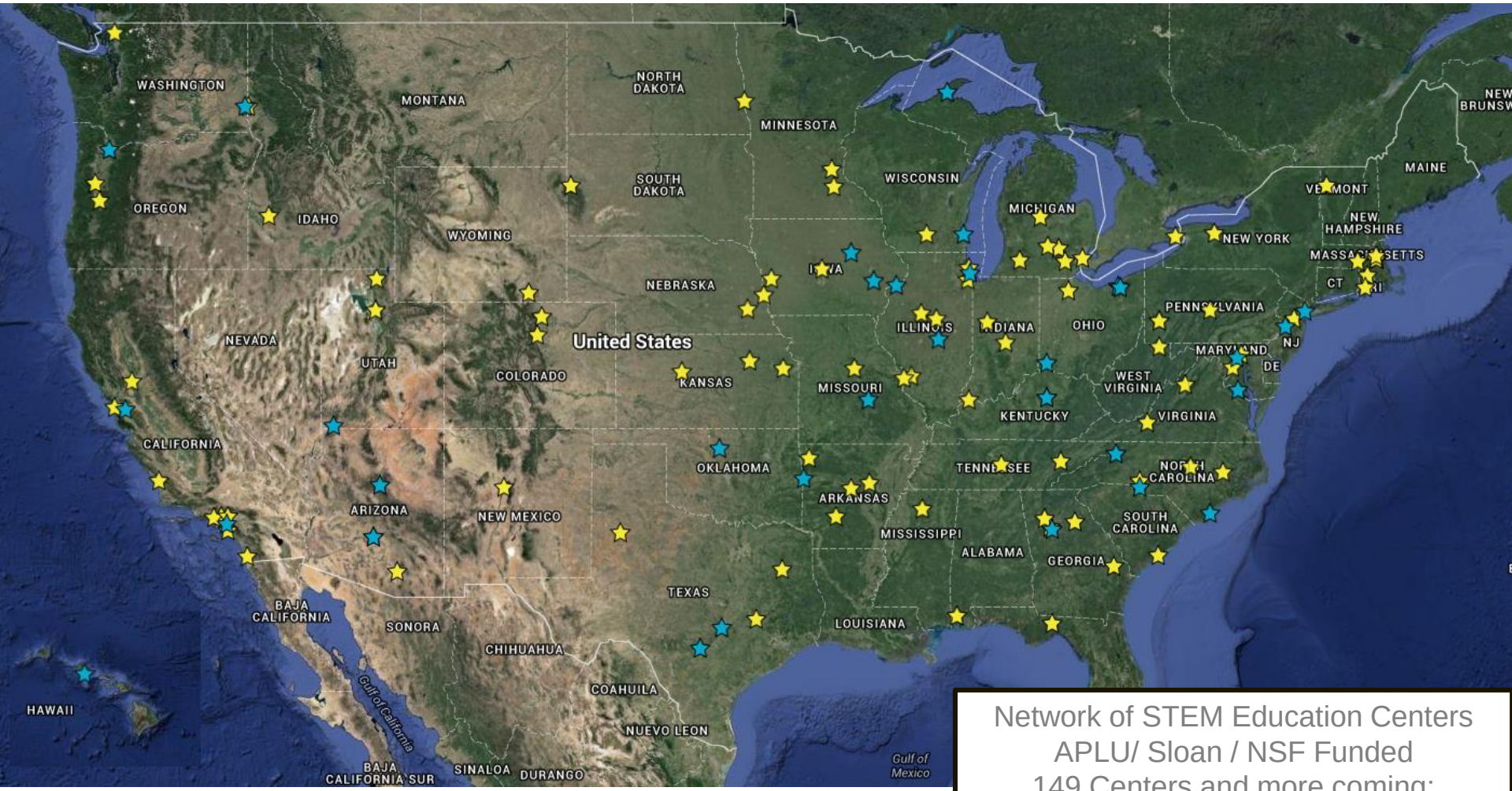
Based on 100 center profiles at NSEC. Percentage of centers that have a focus in these areas.

K12/ teacher pd	Outreach	Undergrad ed	Grad ed	Broader impacts
78%	**70%**	**47%**	**20%**	**19%**

Building the Network

- **Robust and sustained NSEC** that serves the needs of centers for community, professional development, learning about what works, research, and serving as a resource to solve national challenges in STEM education**;**
  - national conference and two workshops/yr
  - online platform of STEM Education Centers with 105 center profiles
  - seed grants for cross-institutional work;
- **Toolkit for centers** (i.e. organization charts, reporting structures, budgets, communication materials, model programs);
- **Guidance documents** on national STEM education issues

Centers in NSEC



Network of STEM Education Centers
APLU/ Sloan / NSF Funded
149 Centers and more coming:
http://serc.carleton.edu/StemEdCenters/

...and more

engineering education community resource

http://bit.ly/engredu

RESOURCES TO SUPPORT ENGR EDUC RESEARCH

Amy S. Van Epps
Associate Professor of Library Science
Engineering Librarian
PhD Candidate, ENE

PURDUE UNIVERSITY LIBRARIES

EER RESEARCH RESOURCES

Engineering Education LibGuide

http://guides.lib.purdue.edu/engreducation

- Primary databases
- Applicable journals and conferences
- Citation Management information

PURDUE UNIVERSITY LIBRARIES

Engineering Education: Databases

Engineering Education

Engineering Library

ENGR library home

ENE Office Hours

Spring 2016

Amy has office hours in Wang 3rd Floor on Wednesdays, 1-3 pm. Feel free to stop by during this time.

Additional times and locations include:

Mondays, 3-5 pm POTR 154
Thursdays, 9:30-11:30 am GRIS 188

ENE Course Guides

ENE 506

Engineering Education Databases

- Scopus
- ERIC
- Compendex
- Education Full Text
- Technology Research Database (now ProQuest Technology Collection)
- LearnTechLib

more...

- Professional Development Collection
- Education Source

ENE - Additional Databases

- PsycINFO
- Sociological Abstracts
- Dissertations and Theses
- Web of Knowledge

BrowZine

Subject Guide

Amy Van Epps

Email Me

book now

PUBLICATION LOCATIONS

"Beyond JEE"

http://guides.lib.purdue.edu/beyondjee

- ASEE 2013 poster and paper
- Annually updated, currently 2014 data

- 2015 numbers – original list plus Purdue ENE publication locations; expanded ranking measures

PURDUE UNIVERSITY LIBRARIES

Beyond JEE: Finding publication venues to get your message to the 'right' audience: Engr Educ Results

A quick guide that presents the information included in a 2013 ASEE Annual Conference paper and poster presentation. Updated in August 2014 to include 2013 ranking information.

Sub-category of engineering education titles

Title	h-index (PoP)	Total of rankings
Journal of Engineering Education * ^ %	37	3
IEEE Transactions on Education %	28	2
Engineering Education: Journal of the Higher Education Academy Engineering	9	2
European Journal of Engineering Education (EJEE) #	15	1
Journal of Professional Issues in Engineering Education and Practice	14	1
The Online Journal for Global Engineering Education (OJGEE) #	10	1
Journal of Pre-College Engineering Education Research (J-PEER) #	8	1
International Journal of Engineering, Social Justice and Peace #	6	1
International Journal of Engineering Pedagogy (iJEP) #	6	1
American Journal of Engineering Education (AJEE) - # potential predatory publisher	5	1
International Journal of Continuing Engineering Education and Life-Long Learning (IJCEELL) #	3	1
Journal of Applications and Practices in Engineering Education #	2	1
International Journal of Collaborative Engineering (IJCE) #	0	1
Engineering Education Letters #	0	1
International Journal of Engineering Education (IJEE)	17	0
Advances in Engineering Education (AEE)	11	0

Subject Guide

Amy Van Epps

Email Me


Ph.D. in Engineering Education Systems and Design (EESD)
Arizona State University
IRA A. FULTON SCHOOLS OF engineering
ARIZONA STATE UNIVERSITY
We are risk takers, entrepreneurs, makers, and scholars: join our ecosystem of innovation.
engineering.asu.edu/eesd

Why EESD at ASU?

- Develop the next generation of engineers
- Join an active community of engineering education scholars
- Get a close look at an undergraduate engineering program with an innovative design project course sequence and close ties to industry, global and community partners
- Become a part of a university that is reinventing the culture around higher education (ASU was ranked the #1 most innovative school in the recent U.S. News and World report)
- Earn your doctorate on ASU's Polytechnic Campus, which combines the benefits of a smaller campus community with opportunities and activities available in a major metropolitan city

ASU IRA A. FULTON SCHOOLS OF engineering
ARIZONA STATE UNIVERSITY

engineering.asu.edu/eesd

Active Research Areas

Faculty areas of expertise include:

- Engineering student pathways
- Increasing participation and retention of underrepresented groups in engineering
- Engineering identity development
- Making and the maker movement
- Effective teaching and assessment strategies for engineering education, including the use of learner analytics to increase understanding of online students
- Entrepreneurship

Some of the target populations that we support within these research areas are:

- K-12 students
- Students in higher education
- Graduate students
- Early career professionals
- Faculty
- Underrepresented groups

Engineering Education Research Initiatives at University of Michigan

ENGINEERING EDUCATION RESEARCH
UNIVERSITY OF MICHIGAN

EER&I Networking Session
2016 ASEE Conference
June 28, 2016

ENGINEERING EDUCATION RESEARCH
UNIVERSITY OF MICHIGAN

EER Faculty

- Tenured/tenure-track ***EER faculty*** integrated into traditional engineering departments at University of Michigan

Shanna Daly
Assistant Professor
Mechanical Engineering

Cindy Finelli
Associate Professor
Electrical Engineering & Computer Science; Education

Aileen Huang-Saad
Assistant Professor
Biomedical Engineering

Joi Mondisa
Assistant Professor
Industrial & Operations Engineering

ENGINEERING EDUCATION RESEARCH
UNIVERSITY OF MICHIGAN

EER Students

- Strong ***community*** of undergraduate, graduate, and postdoctoral researchers
- ***EER certificate*** for engineering PhD students (est. 2009)
  - Teaching Engineering (3 credits)
  - Quantitative methods for educational research (at least 3 credits)
  - Qualitative methods for educational research (at least 3 credits)
  - EER project (3 credits or equivalent)
- College-wide ***EER PhD program***
  - Under development, to be available 2018

ENGINEERING EDUCATION RESEARCH
UNIVERSITY OF MICHIGAN

EER Leadership

- ASEE's 2016 Benjamin Garver Lamme ***Award*** bestowed

David C. Munson, Jr.
Robert J Vlasic Dean, Engineering
Professor, Electrical Engineering & Computer Science

ENGINEERING EDUCATION RESEARCH
UNIVERSITY OF MICHIGAN

EER Leadership

- 37 ***EER presentations*** made at ASEE by 51 UM authors

Robert Coffey Jr.
Aline Cotel
Grace Cravens
Tizoc Cruz-Gonzalez
Shanna Daly
Michael Deininger
Matthew DeMonbrun
Andrew DeOrio
Elizabeth Dreyer
Cynthia Finelli
Robin Fowler
Alexander Ganago
Andrew Giugliano
Deborah Goldberg
Armanda Gonzalez
John Gosbee
Laura Hirshfield
Amy Hortop
Aileen Huang-Saad
Linh Huynh
Megan Kaczanowski
Vasudha Kilaru[F]
Hyunsoo Julian Kim
Joshua Kotrba
Stephanie Kusano
Lisa Lattuca
Jennifer Lee
Di Ma[D]
Raghava Mahankali[F]
Quamrul Mazumder[F]
Joanna Millunchick
Ibrahim Mohedas
Joi-Lynn Mondisa
Christina Morton
Erika Mosyjowski
Mohammad Rasouli
Amy Rechkemmer
Sahithya Reddivari
Sara Rimer
Rachel Schmedlen
Colleen Seifert
Kathleen Sienko
Steven Skerlos
Sarah Sobek
Jan Stegemann
Alexandria Steiner
Tasha Tardieu
Michael Umbriac
Julianne Vernon
Jennifer Wenger
John Wolfe

[D] U-M Dearborn, [F] U-M Flint

ENGINEERING EDUCATION RESEARCH
UNIVERSITY OF MICHIGAN

Questions

- http://eer.engin.umich.edu

- **Email: eerprogram@umich.edu**

Department of
Engineering Education

The Ohio State University
College of Engineering

Undergraduate Education

- **First-Year Engineering Program (2300 students)**
  - Robot Lab
  - Advanced Energy Vehicle
  - Student Instructional Leadership Team (SILT)
- **Multidisciplinary Capstone**
  - Business, industrial design, humanities, and MBA
  - End-of-year design showcase
- **Integrated Business and Engineering 4-year program**
- **Engineering Sciences Minor**
- **Engineering Technical Communication**
  - Technical workshops
  - Creative Writing & Arts Contest

Contact: Dr. Lisa Abrams, Associate Chair
E-mail: *abrams.34@osu.edu*

Department of
Engineering Education

The Ohio State University
College of Engineering

Graduate Education

Graduates of the Ph.D. in Engineering Education at The Ohio State University will be able to

- identify, discuss, and address critical issues facing engineering education in alignment with stakeholder needs;
- design, conduct, and critique research in engineering education;
- demonstrate, value, and apply engineering expertise;
- create, teach, and assess courses and curricula; and
- identify, demonstrate, and value appropriate personal and professional skills, mindsets, and traits;

with attention to inclusion of multiple perspectives and demographics, so that research outcomes are more universally relevant, so that every student has the opportunity to learn, and to create synergy in the midst of differences.

Contact: Dr. Ann Christy, Graduate Chair, Professor
E-mail: *christy.14@osu.edu*

Department of
Engineering Education

The Ohio State University
College of Engineering

Faculty

- Ongoing recruitment of tenure track and clinical faculty
- Internal professional development seminars
- Broad range of staff/faculty skills

Dr. Monica F. Cox, Department Chair, Professor
E-mail: *cox.1192@osu.edu*

What do you most look forward to as a new Assistant Professor of Engineering Education at OSU?

Dr. Rachel Kajfez

Dr. David Delaine

Careers in Engineering Education

Mentors for junior faculty

Career Supporters (P&T and more…)

Academic Administration

Beyond the Academy

- *Industry (various)*
- *Informal Education*
- *Professional Societies*
- *Policy Development*
- *Social Entrepreneurship*

Global Opportunities

David F. Radcliffe
Purdue University

Participant Networking Activity (~35 min)

- **Introductions with Guided Format**
- **Three (~8 min) Conversations in Groups of 2-3**
  - Your Name & Organization
  - Status of EER&I Center or PhD Program/Interest in EER & EEI
  - Suggestions for Starting/Questions About Starting
  - Exchange Business Cards/Contact Information
  - Identify "intellectual neighborhoods" around common research, organization or other questions and interests
  - Talk about ways to follow up
- **Bell will ring once after 7 min and twice after 8 min**
- **Move to a New Group**

Connecting, Expanding & Sustaining the Emerging EER Community (~10 min)

- **Small Group (2-3) Brainstorming**
  - Ideas for (1) local, (2) national, (3) international Community
  - Ideas for Virtual Community
  - Further Ideas
- **Summarize Ideas and Record**

Next Steps

- **Silently reflect on your interests and plans for engineering education research**
- **Jot down**
  - What do you plan to do next?
  - What are your longer range plans?
- **Continue the conversation during the ASEE conference and beyond**
  - EER&I Networks – CLEERhub, REEN, SEFI, National Innovation Network (NIN), NSEC
  - Meet again at the FIE Conference, October, 2016

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- And the ASEE for hosting

Thank you!

An e-copy of this presentation will be posted to:
http://personal.cege.umn.edu/~smith/links.html

ASEE Annual Conference – June 28, 2016 – T459A – 1:15 pm – 2:45 pm

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