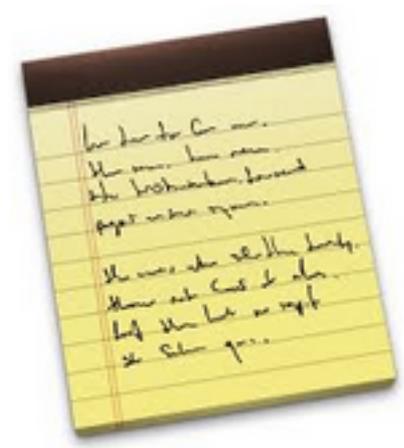


While we know a lot about Innovation and Entrepreneurship (I&E) Education, there is still a lot we don't know, so...

**On the sticky note provided, *write down a question about I&E Education you would like to know the answer to.***



## Summit Supposition #1:

Questions are core to research (and research is one component of increasing access to I&E education for engineering students).



## Summit Supposition #2:

This research should be defined and carried out by researcher-practitioner partnerships.



## Summit Supposition #3:

This research is a means to an end...  
to satisfy curiosity,  
to answer questions  
to *inform/inspire action*





## Exploring what we don't know about entrepreneurship education for engineers

S. Sheppard, S. Gilmartin, H. Chen, M. Besterfield-Sacre, N. Duval-Couetil,  
A. Shartrand, L. Moore, E. Costache, A. Fintoc, Q. Jin, C. Ling, F. Lintl,  
L. Britos Cavagnaro, H. Fasihuddin, and A. Breed

Project start date: Fall 2011  
Grant number DUE-1125457



# The Epicenter Research Summit August 4-5, 2015 Stanford University

**Overarching goal:** Convene individuals who are actively involved in I&E education and research in order to learn from one another, discuss opportunities, and lay the groundwork for a unifying research agenda.



# The Epicenter Research Summit

## August 4-5, 2015

### Stanford University

**Specifically:** Create an event format for researchers and thought-leaders that allows them to...

- develop connections
- actively share ideas and insights
- identify missing pieces and new opportunities
- imagine next steps



# Who was there?

**70 attendees ranging from undergraduate students to industry professionals at 29 institutions/organizations:**

Arizona State University

Bloom Energy

Bradley University

Clemson University

Deutsche Gesellschaft für Internationale  
Zusammenarbeit (GIZ)

Epicenter

Furman University

Georgia Tech University

Iowa State University

Kern Family Foundation

Michigan Technological University

New Mexico State University

Northwestern University

Pennsylvania State University

Purdue University

RH Graham Consulting Limited

SageFox Consulting Group

Technical University Munich (TUM)

Texas A&M University

Tufts University

Union College

University of Florida

University of Georgia

University of Maryland

University of Pittsburgh

University of Southern California

University of Washington

University of Wisconsin-Milwaukee

Virginia Commonwealth University



# Knowledge sharing & discussion

## **Example of Panel:** Research on Students' Entrepreneurial Development and Pathways

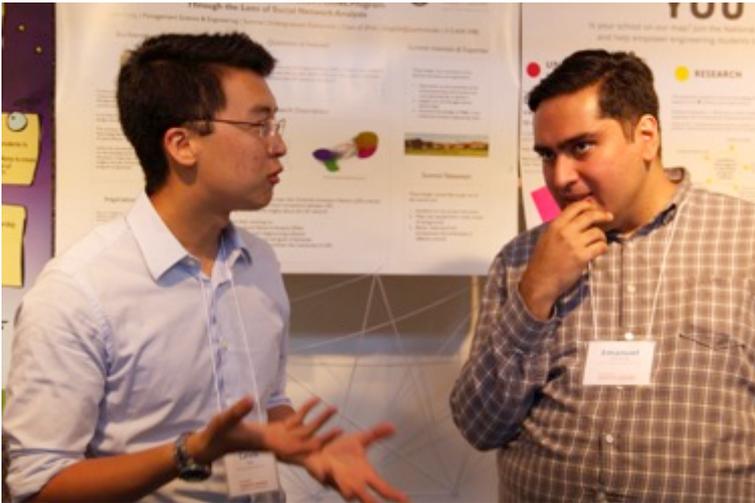


Session notes: <http://epicenter.stanford.edu/page/epicenter-research-summit-session-notes>



# Interactivity woven throughout the 2 days

## Early on: Poster Session



- ❖ All attendees were invited to present a poster
- ❖ Online gallery:  
<http://epicenter.stanford.edu/page/epicenter-research-summit-posters>



# Interactivity woven throughout the 2 days

## Near the end: Re<sup>3</sup> session

- Re-cap: Summit takeaways
- Re-flect: Situate their takeaways
- Re-search: Generate new research questions



# Interactivity woven throughout the 2 days

**Session E: Re-search**

Your Name: \_\_\_\_\_

Ladder of Abstraction  
S.I. Hayakawa

EPICENTER  
**research summit**  
AUGUST 4-5, 2014 • STANFORD UNIVERSITY

Why? So that we might ...  
... and why is that important?

Why? In order to ...  
... and why is that important?

**What is your research question?**  
★

... and how would I do that?

How? By ...  
... and how would I do that?

How? Or by ...

Three Word Title:

**What is your research question?**

Why is this an important question?

How does it connect to goals, motivation and/or feedback?

What partners do you need in this research?

How would you categorize your research question?  
Choose only ONE answer:

Ⓒ Students Ⓒ Programs Ⓒ Curriculum

**Process:**

- On your own, think of a research question that you would like to answer from this Summit. Write it in the center box on the left. Move up the ladder with "and why is that important" and down the ladder with "and how would I do that?"
- Review your thoughts, then re-write your research question. Answer a few prompts about this question. (10)



# What we did with the 46 research questions from the Re-search Session:

- ❖ Questions were transcribed (each authored by a different participant).
- ❖ Analysis focused on categorizing questions and identifying themes across the questions.
- ❖ Many questions fit into more than one category.
- ❖ Categorization done by 2 researchers.



# Three Research Areas:

**Area 1: Linking Outcomes to Reform. (27 questions)**

**Area 2: Understanding Student Diversity. (13 questions)**

**Area 3: Examining Contexts. (12 questions)**



# Three Research Areas

## Area 1: Linking Outcomes to Reform.

*Where does I&E fit into engineering education's imagination? How can assessment strategies support connections between engineering education and entrepreneurship/innovation education as both evolve?*

Bilen et al., Byers et al., Creed et al., Duval-Couetil, Kisenwether et al., Jamieson and Lohmann



# Three Research Areas

## Area 2: Understanding Student Diversity.

*Not all engineering students are attracted to I&E for the same reasons; how does this come into play in framing learning goals? Graduates will take on a variety of engineering and non-engineering related professional jobs; how do I&E skills play roles in these various jobs (and what are the implications in how these skills are taught)?*

Brunhaver et al., Clarke and Antonio, Gerba, Hill et al., Jin et al., Scutt et al., Sheppard et al.



# Three Research Areas

## Area 3: Examining Contexts.

*Not all schools will have the same I&E learning goals for their engineering students, as the larger “ecosystem” of the school comes into play; how can a school identify their own appropriate learning goals?*

Besterfield-Sacre, Özaltın et al., Besterfield-Sacre, Shartrand, and Zappe, Bodnar et al., Duval-Couetil, Shartrand, and Reed-Rhoads, Gilmartin et al., Graham, Özaltın et al., Shartrand et al., Zappe et al.



# Where do your questions fall?

**Area 1: Linking Outcomes to Reform**

**Area 2: Understanding Student Diversity**

**Area 3: Examining Contexts**

**Area 4: Other?**

*Please write your topic number on your sticky note and add your name and email address.*



## Next Steps

1) Collect your questions

2) Test the water on authoring “whitepapers” on:

Linking Outcomes to Reform

Understanding Student Diversity

Examining Contexts



# Acknowledgements

Supportive Epicenter colleagues

Imaginative, dedicated, enthusiastic, and wise Summit attendees and co-hosts

Insightful comments provided by reviewers of earlier drafts of this paper

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# POSTER AT ENT RECEPTION JUNE 16



## Exploring What We Don't Know About Entrepreneurship Education for Engineers

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<sup>1</sup>Stanford University, <sup>2</sup>University of Pittsburgh, <sup>3</sup>Purdue University, <sup>4</sup>VentureWell, <sup>5</sup>SageFox Consulting, <sup>6</sup>Technische Universität München



### What questions do you have about Innovation and Entrepreneurship Education?

In August 2015, 70 attendees ranging from undergraduate students to industry professionals at 29 institutions/organizations convened at the Epicenter Research Summit held at Stanford University in order to learn from one another, discuss opportunities, and lay the groundwork for a unifying research agenda. Three research areas emerged and are described below. Join our community of practice by sharing your questions and contact information on a post-it.

**Linking Outcomes to Reform**  
*Where does I&E fit into engineering education's imagination? How can assessment strategies support connections between engineering education and entrepreneurship/innovation education as both evolve?*  
Bilen et al., Byers et al., Creed et al., Duval-Couetil, Koerner et al., Jamison and Lohmann

**Understanding Student Diversity**  
*Not all engineering students are attracted to I&E for the same reasons; how does this come into play in framing learning goals? Graduates will take on a variety of engineering and non-engineering related professional jobs; how do I&E skills play roles in these various jobs (and what are the implications in how these skills are taught)?*  
Brunkaver et al., Clarke and Antonio, Gerba, Hill et al., Jin et al., Scott et al., Sheppard et al.

**Examining Contexts**  
*Not all schools will have the same I&E learning goals for their engineering students, as the larger "ecosystem" of the school comes into play; how can a school identify their own appropriate learning goals?*  
Besterfield-Sacre, Doolin et al., Besterfield-Sacre, Shartrand, and Zappo, Binkov et al., Duval-Couetil, Shartrand, and Reed-Khouri, Gilmartin et al., Graham, Doolin et al., Shartrand et al., Zappo et al.

