









University of Minnesota

I-Corps[™] L Course Overview

ASEE Panel

Evidence Based Entrepreneurship[™] to Improve (STEM) Education





Rathindra (Babu) DasGupta



I-Corps[™] for Learning



Anita LaSalle

Don Millard

NSF I-Corps Champions



Founders/Developers

Steve Blank



Lean LaunchPad® Developer

Jerry Engel



National Faculty Director I-Corps™





I-Corps[™] L History

- June 2013 Called to serve
- January February 2014 Pilot cohort
- March November 2014 Redesign
- January February 2015 Full cohort
- March May 2015 Redesign

∎ ?

- July August 2015 Full cohort
- January February 2016 Full cohort planned



The Growing Network of I-Corps™ L Teams!



Examples of I-Corps™ L Team Innovations

Concept Warehouse	Platform that improves teaching effectiveness by speeding the propagation of evidence-based instructional practices among STEM faculty.	
Carpal Coding	Bridge the gap in algorithm development and syntax for novice makers to program microcontrollers.	
CryptoClub	CryptoClub is an engaging curriculum for middle-grade students to explore mathematics and cryptography in afterschool settings and online.	
ELeVATE	Holistic transition program that supports veterans interested in engineering and technology careers, and educates faculty and staff on how to set veterans up for success in college and beyond.	
HEIR Corps	Humanoid Engineering with Inexpensive Robots (HEIR) Corps is dedicated to providing a low- cost, socially intelligent humanoid robot platform for K-12 institutions that can enhance STEM and computer science education.	
PictureSTEM	PictureSTEM curricula provide a model of STEM integration for grades K-2 that employs engineering and literacy contexts to integrate science, technology, and mathematics content in meaningful and significant ways.	
Scaling the PERC Program	The Peer Enabled Restructured Classroom (PERC) Program leverages peer leadership to transform struggling secondary schools into academic successes.	
Team ViTAL: Vibratory Touchscreen Applications for Learning	Team ViTAL's innovation leverages commercially available touchscreens and custom software to translate visual content displayed on a screen into content that can be felt (vibrations) and heard (sound).	
WorkReadyGrad	WorkReadyGrad connects students with employers and alumni in STEM, so that students can proactively develop the right skills and network to become "work ready" by the time they graduate.	

Example Team (ELeVATE)

- Holistic transition program that supports veterans interested in engineering & technology careers
- Educates faculty and staff on how to set veterans up for success in college and beyond
- Data Collected: 102 interviews



ELeVATE – I-Corps L Pilot Team 5

Example of Sustaining & Scaling Success

A Project that is a Program:

Team	Started with:	Ended with:
7 ELeVATE	 Single transition program at 	 Multiple institutions (8 institutions already recruited)
(Experiential	one institution for veterans	• 2 new customers: Senior administrators at veterans organiza-
Learning for	interested in STEM	tions, and STEM faculty with joint appointments at the VA
Veterans in	 Sole funding option: more 	• 2 new program services: Consulting (evaluation, recruitment),
Assistive	grants	and Data (gathering, analysis, publication)
Technology &		 Several new funding options: franchise fee, consulting fees
Engineering)		 14 new potential partners identified, including Google, Kognito
		LLC, Wounded Warrior Project, Semper Fi fund

Two Parts to Educational Innovation

- Advancing the science/technology [research]
- 2. Finding a repeatable business model
- Current efforts focus on #1
- Successful efforts require both

Answers to Hypotheses are Outside Your Office/Lab

- You may be the smartest person in your setting
- But you are not smarter than the collective intelligence of your potential adopters, users, customers, partners, payers and regulators
- You can't learn this by reading papers or listening to lectures

You need to get outside your building

Taking you from an Idea to a Business (Sustainable Scalability)

The Lean Startup In Three Steps

1. Frame Hypotheses

Frame → Hypotheses

1. Frame Hypotheses



2. Test Hypotheses

- Frame → Business Model Canvas
 Hypotheses →
- Test Hypotheses

2. Test Hypotheses

- Frame → Business Model
- Test Hypotheses



3. Build Incrementally & Iteratively

- Frame →
 Hypotheses →
- Test Hypotheses +
- Build the product incrementally & Iteratively

- **Business Model**
- **Customer Development**
- Agile Engineering

The Result: Evidence-based Entrepreneurship

Teaching Team

I-Corps[™] L Teaching Team Network



Stephen L. Canfield Tennessee Technological University



Dean Chang University of Maryland



Shawn Jordan Arizona State University





Russell Korte Colorado State University

Ann McKenna

Arizona State University



Austin Technology Incubator



Todd Morrill Venture Management Group



Heath Naquin Next Generation Photovoltaics



Karl Smith University of Minnesota & Purdue University



Heidi Olinger















Christopher Swan

Tufts University

I-Corps[™] L Teaching Assistants





I-Corps[™] L Logistics Team





Brandy Nagel Georgia Tech, VentureLab





Tengiz Sydykov

Evaluation Team

Gary Lichtenstein





Cathleen Simons





Sheri Sheppard



Stanford University

