

# Teaching Entrepreneurship to Engineers and Scientists

## SEE-19 and REFLECT 2003

*Tom Byers*  
*Stanford University*

# Agenda

- Introductions
- Q1. Why is this important?
- Q2. What is the situation (region and university)?
- Q3. What can a university do?
- Q4. Who can help?
- Q5. How much will it cost?
- Q6. What are some obstacles and solutions?
- Q&A and discussion

**S T A N F O R D  
T E C H N O L O G Y  
V E N T U R E S P R O G R A M**

**“We believe engineers and scientists need entrepreneurial skills to be successful at all levels within their organizations. Our center is dedicated to accelerating high-technology entrepreneurship education and creating scholarly research on technology-based firms. We prepare students for leadership positions in industry, universities, and society, and we disseminate our research and teaching knowledge throughout the world.**

# 1. First Things First ...

## Why is This Important?

- Economic growth depends upon both high technology and entrepreneurship
- Great opportunity to build strong relationships between university and industry
- Huge opportunity for impact through millions of students via skill development of the next generation of technology leaders ...

# Seven Important Skills for Tomorrow's Entrepreneurial Leaders Stressed by STVP

- Creativity and Opportunity Evaluation
- Real-time Strategy and Decision Making
- Comfort with Change and Chaos
- Teamwork
- Evangelism, Selling, Negotiation, and Motivation through Influence and Persuasion
- Oral and Written Communication
- Basics of Start-Up Finance and Accounting



**Donielle Newell**  
**Junior in Biomechanical Engineering**  
**Enrolled in “Management of Technology Ventures”**  
**Stanford University**

**“I think that entrepreneurship is at a very important point in history right now. As we see government not being able to solve the world problems..., it is a particularly critical time for entrepreneurs who really believe in making people’s lives better through whatever industry they are in. Entrepreneurs have the power to leverage the economy in order to create societal change. This can be in technology, social issues or whatever someone feels needs to be changed. I believe that entrepreneurs have a mentality and drive to get things done and they do not allow their resources, or lack thereof, to prevent them from their goals. We need more people who run the world to have this mentality.”**

## 2. What is the Situation in Your Region?

- Located near a vibrant technology setting?
- Primary industry in your region?
- Community contacts and role models available to help?
- Local focus on small or large business?

# What is the Situation at your University?

- University's vision is...?
- University's orientation: research or teaching?
- Publicly or privately funded?
- Undergraduates, graduates or both?
- Collaboration opportunity with the business school?
- A champion or leader identified? Faculty or staff?
- Which department is the most influential on campus?
- Existing links to industry that can be exploited?
- Does the university “commercialize” effectively?
- Financial support to date and likelihood going forward?
- Support from administration and successful alumni?

# 3. What Can a University Do?

## BASIC

## ADVANCED

Identify seed funding for a pilot program



Obtain long-term grants and endowments

Identify & support champion to pilot a program



Establish full tenure-line and adjunct faculty, center director, and staff

Implement a simple work/study program (e.g. student internships)



Create an “Entrepreneurial Technology Management” program with courses, networking and mentors

Create brochure and web site



Build extensive web site as a community resource

# What Can a University Do? (continued)

## BASIC

Begin an entrepreneurship club for students



Start a monthly speaker series with advisors



Offer first course:  
*Introduction to High-Technology Entrepreneurship*, using STVP design & case-based instruction



Write cases on local ventures



## ADVANCED

Build the program: business plan competition, start-up job fair, networking with other schools, regular newsletters

Establish weekly, for-credit speaker seminar with online functionality

Establish more courses: venture creation, marketing, strategy, finance ... and leverage existing courses

Establish full research effort: books, articles, PhD students

# What Can a University Do? (continued)

## BASIC

Identify faculty for collaboration



Create a cross-university entrepreneurship task force

Develop an advisory board with key community leaders



Create networking events and mailing lists for your region

Develop ties with VCs



Consider establishing an incubator

Join professional societies: ASEE (American Society of Engineering Education)



Attend and participate in conferences such as REE (Roundtable on Entrepreneurship Education)

## 4. Who Can Help? ... Campus Resources

- **Primary faculty**
  - Engineering and science faculty
  - Business and management school
- **Campus leadership**
  - Department chairs
  - Deans, Provost, and President
- **Other professional schools (medical, law, etc)**
- **Staff**
  - Student service coordinators
  - Technology transfer officers
  - Development officers (fundraisers)
  - Campus placement & career skills groups

# Who Can Help? ... Community Resources

- Community leaders
- Alumni: entrepreneurs, CEO's, & founders
- High-technology companies
- Local business associations
- Support services: venture capitalists, law, accounting and consulting
- Government leaders

# Who Can Help? ... Global Resources

- **Kauffman Foundation**  
<http://www.emkf.org>
- **Stanford Technology Ventures Program (STVP)**  
<http://stvp.stanford.edu>
- **Babson College**  
<http://webproduction.babson.edu/babson/babsoneshipp.nsf/>
- **American Society of Engineering Educators (ASEE)**  
<http://www.asee.org/>
- **National Collegiate Inventors and Innovators Alliance (NCIIA)**  
<http://www.nciia.org>

## 5. How Much Could It Cost?

- First year start-up costs: \$100,000
- Basic run rate: \$100,000
- Advanced run rate: \$300,000

Note: Some of these costs could be in-kind support from the university (such as leveraging existing faculty and facilities).

## 6. What are the Obstacles and Solutions?

### OBSTACLE

### SOLUTIONS

Lack of funding



Look for:

- Successful entrepreneurs & alumni
- High-technology companies
- Local business associations
- Trusts and foundations
- Local, regional, national government support

No support from senior university leadership



- Seek help from university president and development office
- Consider partnering with another school within university, e.g., medical

# What are the Obstacles and Solutions?

(continued)

## OBSTACLE

## SOLUTIONS

Lack of teaching talent →

- Seek entrepreneurs to help
- Collaborate with other universities
- Develop faculty (PriceBabson, etc.)

No support from regular faculty →

- Partner faculty with an entrepreneur
- Combine teaching & research efforts

No clear charismatic leader →

- Bring in a successful, dynamic leader from industry

# The Core STVP Team at Stanford

## Regular Faculty

**Tom Byers,**  
**Academic Director**

**Kathy Eisenhardt,**  
**Academic Director**

**Riitta Katila**

**Bob Sutton**

**John Weyant**

## Adjunct Faculty

**Stan Christensen**

**Randy Komisar**

**Tom Kosnik**

**Mark Leslie**

**Mike Lyons**

**Audrey MacLean**

**Doug Mackenzie**

## Staff

**Tina Seelig,**  
**Executive Director**

**Katherine Emery**

**Sue Purdy Pelosi**

**Josh Mangum**

**Michelle Tung**

# What are the Obstacles and Solutions?

(continued)

## OBSTACLE

## SOLUTIONS

Student demand  
overwhelms supply



- Turn scarcity into selectivity
- Leverage online resources

Cross-campus rivalries at  
school or program level



- Create a cross-university entrepreneurship task force

Few educational resources



- Bring local businesses into the class
- Use your technology transfer office
- Visit STVP Educators Corner  
(<http://stvp.stanford.edu>)



# STVP EDUCATORS CORNER

http://Chroni

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The Educators Corner is a digital archive of teaching resources for entrepreneurship, engineering and science educators around the world. This project is funded by the Kauffman Foundation.

## Highlights:

STVP EVEN

Please click on slide for more info



### OCT 23 - 25

The Roundtable on Entrepreneurship Education for Engineers conference gathers business, science, and engineering faculty from leading universities in the United States with the goal of accelerating entrepreneurship education for scientists and engineers.



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How to Build an Entrepreneurship Center

Comparing and Contrasting Entrepreneurship Centers

Index of Entrepreneurship Centers for Engineers

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# Q&A and Thanks

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