Entrepreneurship and Engineering Education: The Multidimensional Approaches of Rose-Hulman Institute of Technology

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EDUCATION AND BUSINESS DIFFERENCES

• Pursuing Truth Is Not The Same as Pursuing Profits
• Academic Time Is Different From Business Time
• Business Allocates Resources For Value, Not “Fairness”
• Business Values Ambitious Failures Much Less
ENGINEERS & ENTREPRENEURIAL TRAITS

• Intelligence
• Courage
• Knowledge of Technology, Business & Culture
• Ability To Manage Risk
• Ability To Tolerate Uncertainty
• Interpersonal & Communication Skills
DO ENGINEERS HAVE A CHOICE NOT TO BE ENTREPRENEURIAL IN THE 21ST CENTURY?

• Rapid Technological and Business Changes
• Compressed Product Development Times
• Cross Functional Teams
• Technically Best Does Not Mean Commercially Successful
ENTREPRENEURIAL EDUCATION ADDRESSES ABET CRITERIA

- “(d) An ability to function on multi-disciplinary teams
- (e) An ability to identify, formulate and solve engineering problems
- (f) An understanding of professional and ethical responsibility
- (g) An ability to communicate effectively
- (h) The broad education necessary to understand the impact of engineering solutions in a global and societal context
- (i) A recognition of the need for, and an ability to engage in life-long learning
- (j) A knowledge of contemporary issues
- (k) An ability to use techniques, skills and modern engineering tools necessary for engineering practice”

(2002-03 Criteria for Accrediting Engineering Programs, p 1)
HOW DOES ROSE-HULMAN COMBINE ENTREPRENEURSHIP AND ENGINEERING EDUCATION?
RHIT-T HE PRIMARYLY EDUCATION
END OF THE SPECTRUM

• Economics Course Called The Entrepreneur
• Independent Study For Real Business Plans
• Electrical And Computer Engineering Sequence
  – Requires Some Commercialization Assessment
  – Uses Guest Lecturers And An Engineering Management Graduate Student
  – Has Generated E-teams & Potential Innovations
  – Has Generated Improved Student Responses
THINK ENTREPRENEURIALLY

Engenius
Solutions
ROSE-HULMAN VENTURES
THE GREATER BUSINESS FOCUS END

• Educational Purpose Is Still The Major Motivation
• More Emphasis On Timely Completion To Meet Customer Requirements
• Opportunity For Real Life Contributions And Proximity To The Pain Of Real Potential Failures
OVERVIEW:
WHAT DID ROSE-HULMAN RECEIVE?

- $54.6 Million
- Two Three-year Grants From Lily Endowment
OUTCOMES EXPECTED BY LILY ENDOWMENT

• Unique Educational Experimentation

• Impact Indiana’s Economic Realities
  – Indiana Ranks 48th of the 50 States in % of Population Holding at Least a BS
  – Indiana Ranks 50th in % of Population Employed as “Professionals”
  – Only 37% of Engineering, Science and Technology Graduates from Indiana Colleges Work Here

• Change It !!!!
ROSE-HULMAN VENTURES: THE MISSION

• Foster Creation And Growth Of Innovation-based Businesses By Providing Access To:
  – Infrastructure
  – Technical Support
  – Business Support
  – Capital

• Thereby Providing:
  – Faculty/Student Educational Experience
  – Economic Growth For Terre Haute And Indiana
SPECIAL FEATURES

• Technology-based Incubator
• New-Product Development Laboratories
• Information Technology Infrastructure
• The Entrepreneurship and Business Planning Group
• Rose-Hulman Venture Dollars (RHV$)
SPECIAL FEATURES

• Internships For Students To Work With Technological Entrepreneurs
• M.S. In Engineering Management Assistantships For Entrepreneurial Engineers
• Innovation Fellows - A Learning And Contributing Experience For Technical Experts
• Alliances With Other Schools: Business, etc.
RESULTS

• 200 Students and Faculty Have Gotten Unique Hands-on Experience
• 32 Indiana Based Technology Ventures Helped
• First “Graduate” Was Student Company
• More Graduates Interested In Staying In Indiana