Session B: Compare and Contrast Different Entrepreneurship Program Mission Statements

Date: Friday, October 26th 2001
10:45 – 12:00 pm

Session Leaders: David Ku, Georgia Tech

Notes:

Entrepreneurship education: Business schools vs. engineering schools and physical vs. life sciences.

I would talk about our program at Georgia Tech. One of the things I take away from REEE are successful practices. Our program was designed to provide engineers with business school skills. Many engineers do not start out knowing how to read standard business information, i.e., balance sheet, language like ROI, etc.

One of the major questions is how do you get these things funded. Whitaker was our initial donor and they have funds and are very interested in engineering education. The other aspect of Georgia Tech that is interesting is the cooperation between the engineering school and the college of management. We combined our programs and use business school faculty to teach the engineers. We are also an engineering driven school.

Our premise is that engineers do not have time to go back for a business school. We have four courses that provide core business skills to engineers: Principles of Management, and electives like Legal and regulatory issues, venture finance or negotiation, and commercialization. Once they get this ‘head start’ course (Principals of Management) then they are able to take regular business school courses.

We also have courses for faculty and the community, for example, we have a course called "Starting and Growing your own Company". We also do seminars to build community that are like the STVP Thought Leaders series (we’ve unabashedly cloned the idea from STVP). We also have a Startup Cafe, which helps to connect ideas with business professionals – no charge to the entrepreneur. This lets people get practical advice. Payback to business professionals is that it gives them opportunities for leads. Every available slot is filled.

Q: How do you handle the intellectual property issues with this?
A: One of the sessions is with the OTL person. Our role is to facilitate. We do not get into these disputes or questions, sort of like NPR.

Q: Doesn’t that cause a problem because is this not public disclosure.
A: No, because it is one-on-one.

A: Most VC’s won’t talk to the entrepreneur if they are asked to sign a non-disclosure.
A: We have something at UCSF where we have someone give advice as to what constitutes disclosure. We also facilitate peer-to-peer meetings.

We have programs for research for faculty – REER. This is an academic conference for analysis of entrepreneurship, meeting March 21-23. This is an example of the type of conference we are trying to promote.
Now on to the topic of this discussion.

**Teaching of Entrepreneurship in B School vs. Engineering Schools. IT vs. Life Sciences**

The teaching of to engineering students can pose new challenges. We are starting a new entrepreneurship program at Penn State and we are asked to work with the college of business. Working with the B. School, we came up with a core set of courses for basic business schools: Business Skills, Finance, Marketing, IP. Business school faculty teaches these courses to engineering students.

Q: Can you give some more description on the finance part? We are trying to set this up at UCSD.
A: It’s really business finance, because if an engineer wants to put together a company they need to understand the basic instruments of finance.

Q: Do you go to business school to get requirements or do you develop them.
A: We develop them together with business school.

Q: Does business school faculty teach these?
A: Yes.

What we do at ‘Florida’ is not separate life sciences and IT. We mix the students.

At UCSD we are all life sciences. What we did was start with a survey course. We brought in faculty from outside, taught class, and then asked students where they felt they needed more depth. My problem is finding faculty because all we have are scientists.

Question on finance vs. accounting. What people really need is information on taxes. This is where people can really get into trouble. You can set things up on QuickBooks but really need to know difference between things like what is and is not a capital expense.

At UT Austin we try to increase the creativity and innovation of all students. We do a lot of cross-listing of courses among Engineering, Natural and Life Sciences, Law and the Business School. Students also find then find themselves working with students from other areas, difficult from them at first but greatly valued by end of course.

On of the challenges students face in mixed courses is that they can feel that they need to understand everything the other students understand.

Business students usually want to build a business but are unclear on what they want the business to be in. Engineering students have specific ideas but do not know how to build the business.
We have faculty from technology departments take MBA exit courses. The output is the faculty beat the class average in marks and did all their assignments. Who do you get to teach technologist.

Most of the courses designed by schools of business are not designed with the entrepreneur in mind. Entrepreneurs don’t need finance as much as they need budgeting, human resources, taxes.

At Georgia Tech we have courses that can be part of the minor for the PhD.

Q: I have a class that is very mixed. We ran them through HBS cases and what we found is that they understand the lingo. Engineers came up with real high tech stuff. When asked to refine, they dropped the business parts and focused only on the technology. Have others of you run into this?

Mark Leslie: In an engineering school, the foundation business school courses are critical. There is no substitute for a real strong operational experience.

Occasionally it is a good idea to survey the market and ask the recruiters where they think the recruits are falling short. Scientists who come into business need to get some important skills (i.e. project management!). Also, we need to ask ourselves, are we training future CEO’s or project managers.

If students are going to successfully commercialize anything they are going to have to work in teams.

Do you have experience that engineering students are lower life forms?

There is really a different way of thinking. Business school students really don’t think like entrepreneurs. Engineers really don’t think like entrepreneurs. But they “don’t think like entrepreneurs” in different ways.

It should be no surprise that engineers who take 100 units in engineering and 10 in business that they revert to engineering when solving tough problems. This is the ‘home skill set problem’.

At CAL, we acknowledge and accept the home skill set. We require students to solve problems that they can only solve by moving out of the ‘box’. Engineers are asked to solve business problems. Business students are asked to solve technical problems. We also point out the Thermodynamics is hard but relatively useless. Marketing is easy but very useful. This is hard for engineering students to understand.

Maybe we should offer something in the beginning that has to do with how entrepreneurs think.

We need to understand that most of our students are not going to start their own companies. All of them are going to be working in highly compressed decision making environments. Entrepreneurship is about more than just starting companies. Engineers need to know how to communicate across areas in order to get things like design done.
Most students may not start their own businesses, but still a large number will. There are two things we should try to teach: 1) there is more than just the product idea, what are the right things to do. 2) What select business skills do they need to get started? We need to give them a few key skills, as there is just not enough room in the engineering students course load to do more.

There is very little room in engineering curriculum, particularly at undergraduate level. High have been doing a course for 8 years where I bring in people from the high tech entrepreneurial community. I think our biggest challenge at the undergraduate level is not worrying about the specific skills, but is about nurturing the innate entrepreneurial abilities that some students have. We need to help them think about more than the technology.

I suggest that an engineering team that designs a product ignoring controls has done a poor job. Likewise, an engineering team that designs a product without taking into account customer requirements has done a poor job.

On of the challenges is that engineering faculty do not have incentives to learn the business/entrepreneurship topics. What we've done is hire adjuncts who have experience but they do not get accepted as well.

Director of MBA program at Carnegie Mellon. Some of problems we are having at CMU is deciding what we teach the different students. If we teach engineers everything then there is no need for business schools. We are trying to focus on the commonalities. Lets teach them respect for teamwork, innovation, planning, and communications. And then we let each discipline pursue its own the entrepreneurial pathway.

Merging of skills across disciplines in creating a new venture idea. Most students don’t make a new company, but what they do is create ventures within companies. Most commercialization comes from existing companies.

We had business students take into to engineering class. We had engineering students take intro to business classes.

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*Notes taken by Jeff Martin, Stanford University.*