A Boot Camp Model Program Approach to Develop an Entrepreneurial Focus among Technology and Science Professionals

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Abstract

The Center for Innovation and Entrepreneurship Boot Camp for non-business professionals concept grew from recognition of the need to provide an opportunity-focused experiential environment to create entrepreneurial champions for a new program. Commitment to a philosophy of entrepreneurship as a foundation for change-based growth in education and business underpinned the objectives of the boot camps. An overriding university goal was to enhance knowledge and encourage the use of innovative and alternative sources of funding and application of entrepreneurial concepts to project ideas, to research, to teaching, and to commercialization efforts for university-generated technologies. The results from the first two pilot programs were positive changes in attitudes and practices at the host university and the external participants from the region. New courses, projects, and requests for related activities are examples of the outcomes.

Introduction

This report illustrates the need for a technology-focused entrepreneurial boot camp for technology and science professionals, including students. The rapid advances in innovations and technology in our lives have created a need for university programs to address this change. Professionals and students must be able to understand and use technology in their careers, and to develop their own businesses. Engineering and technology participants are attracted to creating their own companies but do not traditionally have the skill sets to evaluate opportunities and create successful firms.

The use of interdisciplinary teams in the programs discussed in the boot camp, and the emphasis on an opportunity focus will be the two key drivers of creating the entrepreneurial orientations related to innovation and problem-solving. Business faculty and students typically have different concerns based on their backgrounds than do the technology types. This difference in focus can push the technology participants to deal with issues they might see as minor or to be dealt with later. The technology participants bring their problem-solving skills and scientific methods to the table. The other benefit of using interdisciplinary teams is the exposure to different reading, viewing, and life experiences.

For example, from discussions with the potential engineering participants after a faculty presentation, not one person received the *INC Magazine* free e-mail newsletters, or had ever heard of Web sites such as www.entreworld.org. Similarly, the business participants do not know the technology publications, and almost always assume cost of production will work out or be less than they thought. Neither group seems to understand pricing and distribution costs and their impact on the potential venture.

The success rate of bringing undergraduate, graduate, and professional engineered products to market has been hindered by the lack of business expertise on the projects. It is essential that universities create an environment to convert their intellectual property into successful business ventures. The missing ingredient for most universities is a curriculum that leverages and integrates the campus-wide strengths in place at their institutions.

An overriding university goal of the boot camps was to enhance knowledge and encourage the use of innovative and alternative sources of funding and application of entrepreneurial project ideas to research, teaching, and commercialization of university-generated technologies. Specific objectives included:

- establishing a university-wide entrepreneurial focus;
- creating an entrepreneurial awareness and focus among boot camp participants;
- sharing information and resources to enhance the development of entrepreneurial education among

universities by developing specific teaching units/modules for the discipline-specific areas;
- promoting training opportunities for all participants so they can best determine the ways that entrepreneurship can be applied in an academic discipline-specific manner; and
- promoting Rowan University's Center for Innovation and Entrepreneurship development as an entrepreneurial center of the Greater Delaware Valley.

These objectives were attained by developing interdisciplinary teams that provide an additive, not duplicative, approach to project ideas. Based on a growing entrepreneurial understanding from the boot camp model that was to be both academic and personal, the participants were encouraged to look at new behaviors and processes to capitalize on opportunities.

Sample boot camp projects in the faculty pilot

The participants of the boot camp displayed a desire to achieve a high level of commercial viability, while still recognizing the input and partnering potential of the university. Two projects in particular reflected this ethos. The first was the winner of the award for being the most innovative project. This project called on significant technical and medical marketing/development skills for a product to effect insulin stability in patients. The project relied on the experimental, technical, and cognitive skills found in universities, and also on the entrepreneurship and innovation abilities of the team in both the development and marketing of the product. The product included a watch-like monitoring device that used non-penetrating technology to measure blood sugar levels. This device was then linked to a patch by a wireless sensor that would send the message on what medicine dosage to release.

The Laurentique System (proposed by Simon-Q Technologies) automates the monitoring of glucose levels in the blood and delivers insulin as needed for insulin-dependent diabetics without the painful penetration of lancets and needles. In addition, the Laurentique System recognizes and adjusts for varying levels of skin permeability.

The second significant project developed from a philosophy of care and recognition of how an entrepreneurial endeavor can grow as a private enterprise supported by trained people coming from colleges and universities. The project addresses the skills, needs, and the best teaching practice to achieve high levels of service based on entrepreneurial approaches to skills and knowledge development. A brief summary follows.

The Entrepreneurial Center for Nursing at Wilmington College, proposed by two graduate nursing faculty, addresses the specific needs of nurses for acquisition of business skills and entry into the competitive healthcare market. The center is designed to enable nurses to move from the clinical setting to business ownership by providing education, training, support, and funding which are needed to stem the loss of nurses in the marketplace.

Other projects related to industrial design; graphic technologies; technical writing and preparation of manuals, textbook supplements, and video teaching tools; a wear/shock indicator for running shoes; an online grant writing service; a museum watch design firm; and a teacher/student learning skills matching product.

Development of a technology cohort for future boot camps

In support of technology entrepreneurship and to encourage people to participate in future boot camps, Rowan University has established The Entrepreneurship Concentration (TEC), a concentration and certificate program that integrates core entrepreneurship concepts to combine the chances of success that reside in the College of Business with the outstanding clinic/project orientation that exists in the College of Engineering. The concentration will leverage Rowans resources to develop a high-profile, attractive program producing E-Teams that create products or services that can be commercialized.

The twelve-credit hour concentration and certificate program benefits from team-based courses. Combining the talents and skill sets from the multiple colleges offers the potential of enhanced performance for each team. The goal is to think about the problems that need solving, rather than the possible technology. This opportunity/need focus is a basic entrepreneurial tenet, and underlines the need for the integration of the business and technology approaches. In addition, the TEC program aids student attempts to turn hardware into successful business enterprises by providing students with the knowledge and incubation services necessary to compete. Efforts to extend the TEC to other science areas and expand engineering participation are planned for 2003-04.

implementation steps for a successful boot camp

Universities attempting to develop their own boot camp models should consider the time, purpose, and outcomes they desire. The Rowan University boot camp model is a series of intensive, multi-day, interactive workshops designed to develop an entrepreneurial awareness and orientation. A train-the-trainers model for familiarization with the fundamentals of entrepreneurship education is employed. The Rowan model translates entrepreneurial concepts and ideas into participant-specific situations. The result for each participant team is an action-based plan for entrepreneurship awareness and practical integration into courses, research, and actual new firm formations. Specific academic-based outcomes may include development of specific teaching units/modules for discipline specific areas, opportunity analysis/business plans, development of new courses at participating universities, and development of a regional entrepreneurship leadership role. Commercialization outcomes include the product development effort for the patch project discussed earlier. Universities developing their programs can consider both of these outcome possibilities, and are encouraged to add their university-specific focus.

The boot camp model is organized as a series of two two-day programs conducted on a Friday afternoon/evening and extending until Sunday evening, with a three- to five-week working period between. The ideal boot camp size is twenty-five to thirty participants from multiple disciplines.

The first day of the first program introduces participants to the core concepts of entrepreneurship, sources of assistance for participants, useful information sources, foundations/supporting organizations, and Web resources. The remaining program incorporates half-days for discussions and exchanges as well as half-days for group research and work on business plans. Early discussions focus on developing a business concept, the core idea, a quick opportunity analysis screening, competitive advantages, markets, pricing, and other key areas. The second two-day program incorporates half-days for group research and work on business plans in addition to funding discussions and team building exercises. Additional intellectual property issues are stressed in the final sessions.

Throughout the boot camp there is ample opportunity for question and answer sessions, as well as listening to guest speakers. In addition to the expertise available from the program moderators and guests, access is provided to library and Web resources (including the advisory board of faculty, business owners, and specialists in an ask-the-experts chat room format). As a reference source, participants receive the basic training manual, along with supplemental materials from such sources as the Marc Dollinger book, *Entrepreneurship Strategies and Resources*; Business Plan Pro Software, Inc.; and *How to Really Start Your Own Business*. A new resource that could be useful is the *Getting Started as an Entrepreneur* Student Handbook from the NCIIA. With slight modifications, its minimalist approach could work in a boot camp environment.

A brief summary of tasks to be completed for successful implementation includes

***Step 1**: Be careful with time and date conflicts.* Remember that participants' target market timetables, committed times for department activities, and national conferences are different than yours. Second, some colleges have a culture of working weekends or holiday breaks and others do not. Take these into consideration.

***Step 2**: Budget minimization is likely to be a key issue for everyone without deep pockets*. The schedule started at 2:00 p.m. to give participants a half-day in the office, and to avoid a twelve-dollar minimum lunch for each participant and three or four support people. The Friday evening sessions were meant to be informal working sessions, and two-for-the-price-of-one pizzas were a budget saver. Bringing your own beverages in a cooler also keeps people there and is a cost-saver. Remember, we are bootstrapping for the most part. The Saturday sessions ended by 5:00 to allow people to get home for the evening and to avoid a twenty dollar per person minimum dinner cost. By staying only one night each time we avoided the original Thursday night arrival hotel bills. This cost sensitivity can mean the difference in doing it or not doing it for many places.

***Step 3**: Seek donations for materials, textbooks, software, and handouts*. We were able to get INC Magazine and NFIB to support the boot camp, and a technology focus could mean NCIIA publications would be available at a low cost.

***Step 4**: Recruit instructors/mentors with relevant entrepreneurial experience from local alumni, companies, major corporations, donors, and friends or by using the Web*. Mail to area higher education institutions; and network with regional associations such as chambers

of commerce and entrepreneurship/small business associations.

Step 5: *Provide access to transportation, security, lodging facilities, meeting rooms, technical/audio visual support, and dining services for boot camp participants.*

Step 6*: Solicit donations/funding for program materials from corporate sponsors, and recruit guest speakers and academic entrepreneurs*.

Step 7*: Send personal letter invitations to technology professional staff and faculty*. Include an informational brochure and the local entrepreneurship center Web page address or relevant contact information.

Step 8*: Conduct the two, two-day boot camp programs with a three- to five-week working period*. Stress participation, opportunity analysis, fast failure models, tool development, and an innovative approach to identifying and solving real needs in the marketplace and the universities.

Step 9*: Evaluate boot camp success by completing an initial evaluation at the end of sessions and a long-term evaluation nine months after the camps*. Evaluation could include

(a) Short-term measures: attitudinal changes, willingness to implement modules, desire to recommend students for entrepreneurship courses, and initial interest in an advanced program;

(b) Long-term measures: percentage of participants implementing entrepreneurial training elements or starting a business, recommendations to peers/students to start a business.

Step 10*: Issue Entrepreneurial Training Certificate and apply continuing education units*. The standing offer from the coordinators of the Rowan Boot Camp was that the certificates were the starting point, not the end. Now it was time to move to implementation. The coordinator made an offer of free advice and assistance on a time-available basis for three years to encourage participants to continue and not get bogged down in problems.

Step 11: *Determine the need for additional follow-up support and programs.* The groups both wanted to have a graduate boot camp that would say we now know some of the what and how, and we want to develop tighter action plans and actual grant submissions or commercialization plans. We would recommend that if that is to happen, the timing be consistent with established NSF, NIH, or similar submission dates, and provide the participants a mini grant-writing segment and assistance in forming consortia of universities for the grant submissions. The grant writing—as opposed to technical parts of the grant—requires the formation of consortia and alliances to contribute to fine-tuning the proposals. It should be noted some proposals are not grant oriented, but in need of capital, and the business plan development introduced in the pilot could be expanded for some of the participants.

Summary and conclusion

We feel that the boot camp meets the essential "so what?" test for entrepreneurial programs. It changed the way people thought about their work, produced grant submissions, and made the leaders of the university aware of the need for a goal of creating a more entrepreneurial university.

In conclusion, the core goal for anyone considering starting a boot camp program is to develop an entrepreneurial focus in colleges and universities, to create new opportunities. If people adopting this model can be as entrepreneurial as we want them to be, benefits will occur. Successful implementation of the program can foster the generation and growth of an entrepreneurial orientation in faculty, create new champions, develop funding for individuals and the universities, as well as create awareness in non-business students of the potential for starting and growing firms or simply thinking differently in their professions. As one engineering faculty member stated, we need to help create an entrepreneurial engineer!