

Fostering Innovation in Higher Education through Entrepreneurial Leadership

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ABSTRACT

This paper includes a description of the qualities and attributes associated with Entrepreneurial Leadership and how these qualities interconnect with university culture. A summary of model entrepreneurial programs is also presented. Recommendations for university practitioners regarding the integration of entrepreneurial strategies into leadership behavior are contained in the conclusion section.

Keywords: Entrepreneurial Leadership, Entrepreneurialism, Entrepreneurial Models

INTRODUCTION

Traditional leadership styles do not seem appropriate to meet the needs of 21st century universities. Continually changing technology, a rapidly expanding information bank, shifting community and university cultures, and the lack of financial stability have created dynamic environments in which university leaders must now blend multiple leadership styles and abilities into an integrated approach. This approach must be personalized to build upon the talents and predispositions of leaders, and aligned with the strategic plan of the university. A solution to these issues is adoption of an entrepreneurial approach to leadership. Leaders of universities that do not possess the ability or desire for creative and innovative thinking associated with entrepreneurialism, will have trouble competing with progressive universities that do.

ENTREPRENEURIAL LEADERS

Entrepreneurial leaders embrace a humanistic approach and continually remind people of their importance, as they are the most valuable assets of any university. They encourage people to feel secure and unafraid to try new approaches. This security will allow people to maximize their talents and free themselves of the burden of doubt [1].

Entrepreneurial leaders are not afraid to take risks, have a clear purpose, and high levels of enthusiasm. They know how to get the most out of university membership, and stay abreast of an ever-changing world. Entrepreneurial leaders have unique ideas and are willing to do whatever it takes to bring them to fruition. They take advantage of the most current technology, are tenacious, optimistic, courageous, persistent, independent, opportunistic, and thoughtful, and are considered futurists [2, 3, 4].

Warren [5] identified several qualities of entrepreneurial leaders. They are dissatisfied with the present and have a vision of what a better future may look like. They understand the importance of embracing change, and know it is impossible to realize any vision without a strategy that factors

in the tenets of change. Entrepreneurial leaders are persistent and build on what currently exist in unique and creative ways, instead of looking for other models to emulate. They have the ability to identify talent and bring people into a university community who are aligned with its values. Moreover, they are flexible and willing to consider new ideas. As the world changes at an exponential rate and uncovers new knowledge, entrepreneurial leaders believe that for their universities to survive they must embrace the concept of lifelong learning relative to new and innovative management techniques.

Creativity and Innovation

Entrepreneurialism is fostered through creativity and innovation. Entrepreneurial leaders know how to stimulate creativity and innovation among professors and other members of the university community through the use of shared and collaborative leadership. They model and value creative and innovative approaches to problem solving and improvement of organizational effectiveness. They also welcome diversity and realize that different perspectives that help generate unique innovations [1, 6].

“Creativity is the act of seeing things that everyone else sees while making connections no one else has made” [6, p. 1]. It is a reflective and deliberate process leading to new and novel ideas that grow and take on a new life of their own after maturation. Creativity requires a different way of approaching a problem based on credible information. Entrepreneurial leaders possess creative skills, and feel it is one of their primary roles to derive creativity out of their university membership. They do this by fostering personal imagination, developing individual and collective expertise, and establishing an environment that rewards motivated individuals. Entrepreneurial leaders have an understanding of the status quo that affords them the opportunity to transform creative action into an innovation. An innovation is “adding something new to an existing product or process” [6, p. 1]. Mature ideas turned into action are considered innovations. Innovation is required for a university to have a competitive advantage, nonetheless, a true “entrepreneur is not just an innovator, but one who brings the innovation successfully to market” [7, p. 6, 8, 9, 10].

MODEL ENTREPRENEURIAL PROGRAMS

President Bush signed the America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education and Science (America COMPETES Act) Act in 2007. The purpose of this bill was to improve the competitiveness of the United States by investing in research and development. The National Advisory Council on Innovation and Entrepreneurship (NACIE) was created in 2009 as part of this act. During remarks at Penn State regarding innovation, President Obama stated “The key to our success...will be to compete by developing new products, by generating new

industries, by maintaining our role as the world's engine of scientific discovery and technological innovation. It's absolutely essential to our future" [11, 12].

In research conducted by Haltiwanger, Jarmin, and Miranda, in 2010 and 2011, it was determined that fledgling firms and newly formed businesses disproportionately create jobs relative to their size in the U.S. economy. As while they account for only three percent of total U.S. employment in any given year, they are responsible for approximately 20 percent of gross job creation. Universities are perhaps one of the most important drivers in innovation, entrepreneurialism, and commercialization because they are increasingly involved with three key enabling factors. These factors, 1) developing productive and innovative ecosystems, 2) creating an entrepreneurial culture, and 3) providing sustained financing for new ventures, are required for innovation and entrepreneurship to flourish [13, 14].

Later, in 2011, Dr. Mary Sue Coleman, Co-Chair of NACIE and President of the University of Michigan, authored a letter called *Recommendations to Facilitate University-Based Technology Commercialization*. The letter was signed by 142 of America's leading research universities and later supported by the Association of American Universities (AAU) and the Association of Public and Land-Grant Universities (APLU). Recommendations set forth in the letter were constructed around six categories, with corresponding action plans, based on the three key factors identified in the Haltiwanger, Jarmin, and Miranda studies [13, 14, 15].

The purpose of the letter was to convey support of University-Based Technology Commercialization and was sent to Dr. Gary Locke, Secretary of Commerce. It contained a request for strong budgets for the National Science Foundation, the National Institutes of Health, the Department of Energy's Office of Science, the Department of Commerce's National Institute of Standards and Technology, the Department of Defense Research, Engineering Organizations and other such agencies. Historically Black Colleges and Universities (HBCUs) and community colleges across the nation later replicated similar action [15].

Model Programs

To stimulate growth and provide information on best practices, the Department of Commerce published a report, *The Innovative and Entrepreneurial University*, which included program exemplars taken from 450 colleges and universities with entrepreneurial programs across the United States. It was organized around the six categories found in the *Recommendations to Facilitate University-Based Technology Commercialization* penned by Dr. Coleman. A summary of the programs may be found in Tables 1-6 [15, p. 13, 14, 16].

The first category was aimed at the advancement of student innovation and entrepreneurialism. Action plans associated with this category included building upon and expanding existing activities, creating and growing new programs, extending programs to underserved students from low-income areas, and developing cross-college/cross-disciplinary programs (see Table 1).

Table 1

Promoting student innovation and entrepreneurship

University / Program Title	Description
University of Colorado Innovation and Entrepreneur Degree Program	Bachelor's degree in Innovation (B. I.), through a unique multi-disciplinary team and course-work approach.
University of Illinois's Patent Clinic	Offers law students have the opportunity to draft patent applications for student inventors
Washington University in St. Louis' Student Internship Program	Provides 25 paid internships per summer for students to work in a start-up company.
Rice University	Raised/provided \$1.2 million in cash and in-kind for a business plan contest to serve as a de-facto angel round of funding for the recipient companies.
University of Washington	A multi-level business plan competition comprising of different competitions throughout the school year in combination with seminars, courses, and mentorship to assist in pushing student ideas to the next level.
University of Florida "INSPIREation" Hall	An entrepreneurship-based academic residential community aimed at promoting student-to-interaction, and interaction with researchers, faculty, business professionals, and entrepreneurs.

The second category addressed faculty innovation and entrepreneurialism through financial incentives, sabbaticals, and recognition. Action plans associated with this category were based on encouraging, recognizing and rewarding faculty interest in research commercialization through engagement with entrepreneurs and other partners, creating or expanding programs that connected faculty and students with other partners, and encouraging streamlined reporting and compliance requirements (see Table 2).

Table 2

Encouraging faculty innovation and entrepreneurship

University / Program Title	Description
University of Pittsburgh	A Business of Innovation commercialization course aimed at educating and motivating both student and faculty researchers in innovation development, commercialization, and entrepreneurship.

University of Southern California	Promotes faculty entrepreneurship and innovation by supporting, rewarding, and funding the work of faculty.
University of Virginia	Promotes commercialization and entrepreneurship activities among its promotion and tenure criteria.
University of Nebraska's Medical Center Entrepreneur in Residence (EIR)	The EIR works with licensing staff and researchers at the University of Nebraska's Medical Center to help identify, evaluate, develop, and support the creation of new companies based on UNMC innovations.

The third category promoted funds for proof of concept research along with new mechanisms to defray costs and risks. Action plans associated with this category included active support of university technology transfer functions along with university-industry collaboration (see Table 3).

Table 3

Actively supporting the university technology transfer function

University / Program Title	Description
Utah State University Intellectual Property Services	A university unit within the Commercial Enterprises office dedicated to helping faculty and staff manage, protect and commercialize university intellectual property.
University of North Carolina Chapel Hill's Technology Transfer Internships	Offers internship and fellowship opportunities for students within the TTO.
Cornell University's IP&Pizza™ and IP&Pasta™	An outreach activity for faculty, research staff, and students to increase appreciation of the importance of making university research results useful to society while providing a basic knowledge and understanding of intellectual property issues, an awareness of capturing and protecting valuable intellectual property and potential industry partners.
California Institute of Technology (CalTech)	Files a provisional patent application for every single disclosure that goes through their TTO and later evaluates the technical and business merits after the first year.
Regional Tech Transfer Centers	Serve the needs of research institutions and non-profits throughout a defined region.

The fourth category was to develop university-industry collaboration. Action plans were based on increasing the presence of industries on campuses, sharing resources such as

labs, facilities, students, faculty, and developing accelerators on or within close proximity of campuses (see Table 4).

Table 4

Facilitating University-Industry Collaboration

University / Program Title	Description
Clemson University's International Center for Automotive Research (CU-ICAR)	An advanced-technology research campus where university, industry, and government organizations collaborate.
University of Minnesota's Industrial Partnership for Research in Interfacial and Materials Engineering (IPrime)	A university-industry partnership based on two-way knowledge transfer. The partnership is a consortium of more than 40 companies supporting fundamental and collaborative research on materials.
University of Delaware's Office of Economic Innovation & Partnership (OEIP)	Established partnerships with the College of Engineering and the Lerner College of Business to establish a program entitled Spin In™. The program works with local entrepreneurs who 'spin in' a technology, patent, or product that needs further technical development.
Georgia Institute of Technology's (Georgia Tech) Flashpoint	A startup accelerator that offers entrepreneurial education and access to experienced mentors, experts, and investors in an immersive, shared-learning, open workspace.

The fifth category dealt with strengthening the linkage between regional and local economic development efforts and fostering consortia consisting of university and industry partners. Improving the coordination of local associations, and working with local, regional and state business leaders to promote access to assets were included in the action plan for this category (see Table 5).

Table 5

Engaging with regional and local economic development efforts

University / Program Title	Description
Tulane University's Social Innovation and Entrepreneurship Program	Integrates the university with the surrounding economic ecosystem, thereby contributing to local economic development. Students are required to engage outside the campus with the community, often through entrepreneurial projects.

Purdue University's Technical Assistance Projects	Brings faculty and graduate students together to provide cost-free consulting and assistance to local entrepreneurs on business and technical issues.
University of Georgia's Service-Learning Program	Offers enhanced courses incorporating service-learning opportunities into all of the University's schools and colleges to increase student involvement in their local communities.
University of Kansas' RedTire's Initiative	Helps link graduate students and alumni with struggling local small/medium-sized businesses. Through a collaborative effort, these businesses receive support and mentorship.

The models previously cited represent a diverse sampling of effective programs currently operating within American Universities. The varied approaches they represent to address issues of innovation, entrepreneurialism and commercialization should encourage others to be creative when developing solutions that are tailored to meet the needs of their specific university culture.

DISCUSSION

Creativity leading to innovation is the common thread found among the models cited in this paper. No two models are identical as are no two communities. Entrepreneurial leaders build on the diversity of their communities thus creating compelling reasons for students to enroll. As confirmed by Bagheri and Pihie [17], leaders of universities that embrace entrepreneurialism see their practices transcend multiple disciplines and levels, and influence classroom culture resulting in enhanced entrepreneurial capacity among students. This may impact be one of the most positive consequences of entrepreneurialism.

Entrepreneurial leaders realize competition is keen and at unprecedented levels worldwide. To stay ahead of competitors, they develop creative and innovative solutions customized to fit the particular needs of their educational communities. Consequently, they thrive at universities that are willing to support non-traditional leaders.

As detailed in a number of the models presented in this paper, the need to diversify the way students are taught is an important characteristic of entrepreneurial leaders. It is because of a rapidly changing world and technologies that university leaders need to support a paradigm shift in the classroom and embrace the need for students to be taught how to teach themselves. Because we are training students for jobs that do not currently exist, those who cannot teach themselves how to problem solve when faced with the demands of new jobs will fall by the wayside. To address this instructional dilemma, strategies must change from passive to active with a priority placed on the acquisition of critical thinking skills and collaboration. By doing so, students will become life-long learners and know how to communicate and work with others. These skills will better positioning them to

experience career success and personal contentment in today's changing world.

CONCLUSIONS

Entrepreneurial leadership is one of the most recent delineation of a leadership style. There are many others, including but not limited to:

- Affiliative Leadership—a humanistic approach to leading others with a belief that people are the most important part of an organization [18]
- Coaching Leadership—a priority is placed on developing individuals in the organization [19]
- Democratic Leadership—action is constructed around a shared decision making model [20]
- Servant Leadership—the primary role is to serve others [21]
- Situational Leadership—a plan of action based on the unique condition in which the organization exists [22]
- Transformational Leadership—assuming the role as champion of organizational change [23]
- Visionary Leadership—setting goals and establishing organizational direction [24]

With so many defined styles, university leadership can be a daunting and potentially confusing task; especially for a novice leader with little training and/or limited experience (as are many university leaders). To help clarify and bring order to the plethora of leadership methods, it is suggested that leaders conceptualize their role in chameleon fashion. A chameleon is able to change colors to blend with their environment. A chameleon approach to leadership implies the ability to of leaders to change his/her behavior to blend in with any organization to align with its needs and ensure success.

As a result, university leaders should prioritize and organize their behavior, beginning with an analysis of the current situation. Once the analysis has concluded and the needs of the organization are identified and prioritized, there should be a mixture of Democratic principles and practices along with Affiliative Leadership techniques to empower and validate others to establish a common vision to transform the organization as deemed necessary. To create and sustain momentum, the leader should adopt Servant beliefs while providing coaching and support to those implementing change.

These leadership styles, Affiliative, Coaching, Democratic, Servant, Situational, Transformational, Visionary, and Entrepreneurial should integrated into a comprehensive leadership approach personalized for their university. Entrepreneurialism is an integral part of the approach and should be blended into every leadership technique utilized. The creativity and innovation associated with Entrepreneurial Leadership, along with the other assets described in this paper, are essential to university success. Without these attributes, today's leader is destined to fail.

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