

Creating and Using Embedded Case Studies in Discipline-specific Courses to Promote Innovation, Invention and Entrepreneurship

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Abstract

A digital media library of short case studies is available to embed intellectual property issues in discipline-specific courses. The electronic library, hosted by RIT's Wallace Library, is a response to student interest and the difficulty of adding new courses to crowded curricula. The use of even one entrepreneurial-related case has demonstrated increased student interest, personal expectations and awareness of entrepreneurial issues. The digital case library at RIT includes, for each case: the case, a sampling of discussion points and additional material for the presenter, including background and a learning guide. Cases come from a variety of disciplines. The digital media case library is publically accessible.

Introduction

The globalization of society has placed new demands on technical education. Students expect a relevant preparation for careers they expect to be different than previous

generations. Many students expect to become entrepreneurial innovators and inventors. Fewer students seek or expect long careers with a single established organizationⁱ. The skills required of these new technical professionals are evolving as wellⁱⁱ. Creative courses such as product ideation have long been the province of industrial designers. Business topics for engineers seldom exceeded project decision making and the rudimentary finance topics found in engineering economy courses.

The demand for education in creative and business areas has led to the creation of such minors at RIT, including Entrepreneurship, a multidisciplinary program administered by the College of Business, with courses contributed by the College of Imaging Arts and Sciences, the College of Engineering, the College of Applied Science and Technology and the College of Business. The Entrepreneurship minor was created with a broad sense of “entrepreneurship” that includes innovation and invention, not just venture creation. The challenge for educators is adding material to crowded curricula. Rochester Institute of Technology (RIT) has established a publically accessible digital media library of short case studies focusing on entrepreneurial and intellectual property (IP) issues^{iiiiv}. The cases include a learning guide and sample discussion questions. Applications in the cases may be topically relevant to coursework in the course employed and short enough to be added, for example, to a recitation class meeting without displacing technical topical material.

Results

Two cases were used in successive years in the same course (Fluid Mechanics), one focused on business formation and the careers of two young entrepreneurs; the second followed the IP issues surrounding a new product development and subsequent formation of an enterprise. Both cases were embraced by the students because of local and

university connections. The cases were read and discussed in a single class session the day after a major exam.

To examine the effectiveness of cases in raising student interest in and awareness of entrepreneurial and IP issues, students were surveyed several weeks after doing the in-class cases exercises. The results were presented for the first sample as “anecdotal” (presented at the ASEE GSW Regional Conference 3/2007) pending a second offering of the cases in October 2007 and the second trial results were reported at the ASEE St. Lawrence Section meeting in October 2007.

Students were surveyed to assess changes in their perceptions and their personal interest in IP and entrepreneurship. Both studies showed students had shifted career expectation from “valued employee” toward more entrepreneurial and managerial aspirations (only 24% continued to aspire to “valued employee”). Students self-described themselves as “creative” but after the cases, a higher percentage felt “certain” about pursuing entrepreneurial opportunities. While a slight majority of the students indicated that before the cases they thought becoming an entrepreneur was possible, after the case study exercises, 42% felt they were “certain” to become an entrepreneur.

The IP awareness is important because most of the students in the class were getting ready to embark on their first block of coop. Initially only a small fraction of the students were aware of RIT policy with regard to student IP, and there were also misconceptions about IP issues on coop and after return from coop. The survey results indicated that students were much more aware of IP issues afterward and asked for references to further develop that awareness. Prior to the exercises, 72% of the students had one or more misconceptions about IP at school, on coop or as a permanent employee.

Overall the use of the case studies has, without displacing technical content, accomplished the goal of embedding IP and entrepreneurial issues in technical courses.

Conclusion

The efficacy of case studies in some areas of higher education has long been demonstrated, but is relatively novel in science and engineering^v. The effectiveness of the use of cases to add additional peripheral elements to the course content appears to be substantial. The students participating reported increased interest and awareness of entrepreneurial and intellectual property issues. After participating in the cases, students have indicated an intention to pursue additional relevant coursework and minors or concentrations.

The digital media library must expand and diversify its offerings and expand the use beyond RIT.

ⁱ Troll, R., Daly, M., Lundgren, C., Leonard, W., 2005, "Ideation to Market Education", ASEE St. Lawrence Section Annual Conference, Binghamton, NY, April 2005

ⁱⁱ Fischer, K., Lobaugh, M., Parente, D., 2006, "An Assessment of Desired 'Business Knowledge Attributes' for Engineering Technology Graduates", Journal of Engineering Technology, Fall 2006

ⁱⁱⁱ Lundgren, C., Glenn, C., DeMartino, R., 2007, "Entrepreneurial Cases in Technical Courses", ASEE Gulf-South west Section Regional Conference, S. Padre Is., Tx., March 2007

^{iv} Lundgren, C., 2007 "Using Case Studies to Incorporate Entrepreneurship in Technical Courses", ASEE St. Lawrence Section Annual Conference, Toronto, Ontario, Canada, October 2007

^v Herrid, C., 1994, "Case Studies in Science-a Novel Method of Science Education", Journal of College Science Teaching, February 1994