

Global Engineering Program Mission Statement Development

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Abstract

This paper addresses the results of a poll of a small sample of visiting professors at a mid-size technical university of science and technology located in China [SUES, Shanghai University of Engineering Science]. A number of professors from a Midwestern engineering university have teamed up with the technical university in China to provide a global aspect to engineering education. Perceptions of the efficacy of the visiting professor program are discussed as well as initial concepts of the visiting professor program elements. We list the apparent goals, methods of implementation and what we perceive are shortcomings resulting from unintended consequences. A tentative mission statement is drafted based on the above considerations.

Introduction

A Midwestern technological university [Lawrence Technological University, LTU, in Southfield MI <http://www.ltu.edu>] has teamed with a Chinese technological university [SUES] to teach eight specific technological courses in English only, in an effort to exchange students, introduce the Chinese students to the various teaching methodologies as presented by the various engineering professors. Many of the professors who accept this visiting professorship in China are adjunct faculty who has recently left the automobile industry. This is viewed, in general, as a distinct advantage as it is hoped [and believed] that the recently obtained manufacturing and automotive knowledge gained by these adjunct faculty will provide a vehicle for the transfer of the latest engineering technology to the Chinese. This results in approximately 15 faculty comprising the cohort of the English spoken only program, and approximately 800 engineering students per year. Additionally, a small group composed of the very best of the Chinese students use the opportunity to enhance their English skills, take and pass the TOEFL and CET [Chinese English Test] level 6 test and successfully complete and interview within their engineering department to come to the US university [LTU] for one term concentrating on their senior project. The mechanics of this program has been previously detailed [2-4]. Additionally, there have been a number of student surveys taken to assess the Chinese students' perceived value of the English taught in the eight courses versus the technical content of the courses [1]. However, it is thought that the results of these survey instruments may be inaccurate and misleading, given

the cultural differences of Chinese students and their inexperience and therefore are a bit wary of the survey results. It is noteworthy to observe that the exchange students who spent a semester in the US were not surveyed for their opinions and/or perspectives.

Background

As previously mentioned [1-4], the English spoken only program is comprised of eight specific technical courses taught either in the fall or winter semesters. If a non-adjunct LTU professor is the instructor, they will teach their course at the close of the regular LTU winter semester, since the SUES semester lasts until mid-June and LTU's winter semester ends in early May. The terms in China are always compressed in time for a period of time between 4-8 weeks. This requires that classes are held daily, and each class period conforms to the SUES norm, which are 1.5 or 2.25 hours/class period.

Hence, having class sessions of 1.5 or 2.25 hours each results in weekly class loads of 7.5 hours or a total of 37.5 hours for the entire compressed 5 week term. To support the English speaking professors, each class has a Chinese professor 'assistant' provided. The assistants help with the copying, room assignments, final exam scheduling, and so on. Typically, the Chinese assistants are younger assistant professors [but not always] and their level of English varies widely. They have their own technical teaching load and other teaching/administrative duties. In reality, there is a communication issue with the American and Chinese professors due to these and other reasons. Each class consists of 30-35 students, and each of these sections has a Chinese teaching assistant. Therefore, for each class of approximately 70 students, which is typical, the English speaking visiting professor will have 2 assistants provided. It is not unusual for the visiting professor to have a total of 10 assistants to support the multiple sections. Unfortunately, the duties and responsibilities of the teaching assistants are not clearly defined. The actual support is sometimes spotty. The financial remuneration for the American professors is reasonable by American standards, but excessive by Chinese standards. In addition to the plane fare, room and board while in China, the American professors receive \$2820 per section, which is LTU's adjunct professor rate for a 3-credit course. Upon completion of the dedicated English spoken technical courses, the students receive a certificate of completion from LTU. The student course load of 7.5 hours/week brings into question pedagogical questions beyond that of English Language comprehension. There are also questions involving technical jargon comprehension and idiomatic English comprehension. Although these students have been studying English since middle school, it appears that the focus was on the written language, whereas not on the more difficult mastery of oral, spoken, and listening. On a technical note, courses of similar difficulty and/or complexity require a nominal 3 hour commitment outside of class, involving individual work for each student. For each hour of class work, these results in a total of approximately 25 hours/week outside of class for individual work required to maintain material proficiency.

Carlson's Law

In addition, we will apply Carlson's Law, from Thomas Friedman's latest book [6] to the Global Engineering Program between LTU and SUES. Carlson' Law states that entities that operate bottom up [i.e. listen to their constituents or stakeholders] operate 'smarter', as opposed to entities that operate from the top down - which operate more orderly but 'dumber'. We propose a mission statement for this program which is evolving, but needs to listen to the stakeholders, those with a vested interest, and the professors.

Chinese Governmental Background:

“Did you know that the president of China is a scientist? President Hu Jintao was trained as a hydraulic engineer. Likewise his Premier, Wen Jiabao, is a geomechanical engineer. In fact, 8 out of China's top 9 government officials are scientists. What does the scientific prominence atop China's ruling body say, if anything, about the role of science and technology in China's ability to compete against the U.S. and the world in terms of innovation and economic might?” [5].

Mission Statement Development

The SUES/LTU Mission Statement is being formulated. The associated faculty is presently reviewing the institution's statements: Our Mission Statement is "to develop leaders through innovative and agile programs embracing theory and practice". Our Vision Statement is "to be a preeminent university producing leaders with an entrepreneurial spirit and global view".

Finally, our Values are:

- * Theory and Practice
- * Teamwork and Trust
- * Character and Integrity

Biography

[1] Lisa Anneberg [Department of Electrical and Computer Engineering, Lawrence Technological University], Jiao Luo and Suyun Luo [Department of Automotive Engineering, Shanghai University of Engineering Science], “Student Attitudes on a Collaborative Undergraduate Engineering Program between the USA and China”, ASEE North Midwest Regional Conference, October 3-4, 2011.

[2] Suyun Luo and Lisa Anneberg. “Comparative Study on China Higher Education Internationalization,” 2009 ASEE North Midwest Sectional Conference, Milwaukee, WI, October 13-15, 2009.

[3] Lisa Anneberg and Suyun Luo, “Work in Progress—Global Engineering Collaborative Undergraduate Engineering Program between the USA and China,” 2010 ASEE Midwest Sectional Conference, Lawrence Kansas, October 22-24, 20

[4] Lisa Anneberg, Invited Panel Discussion: “Merits of Study Abroad”, 2010 ASEE Midwest Section at Lawrence, Kansas, October 22, 2010

[5] <http://singularityhub.com/2011/05/17/eight-out-of-chinas-top-nine-government-officials-are-scientists/>

[6] Thomas Friedman and Michael Mandelbaum, *That Used to Be Us: How America Fell Behind in the World It Invented and How We Can Come Back*, Farrar, Straus and Giroux, 2011.

BIOGRAPHICAL INFORMATION

AUTHOR 1 is Dr. Lisa Anneberg, and she is an associate professor of electrical and computer engineering at Lawrence Technological University, and has been there for 22 years. She has a BS in IOE from UM Ann Arbor, and an MS and Ph.D from Wayne State in Computer Engineering. She has previous industrial experience at General Motors, Daimler Chrysler, and US Army TACOM. She is active in the Society for Women Engineers, and IEEE. Her contact email is lanneberg@ltu.edu

AUTHOR 2 is Dr. Harold Josephs is Professor Emeritus at Lawrence Tech, and his areas of interest and expertise are dynamics, kinematics, bolting and joining, quality, reliability, safety and ergonomics. He is a member of the SAE, ASME, the American Society of Quality, the American Society of Safety Engineers, the National Society of Professional Engineers, the System Safety Society, the National Academy of Forensic Engineers (fellow status), . Dr. Josephs is the co-author of the text, "The Dynamics of Mechanical Systems, 2002 , CRC Press. He has consulted for many years in the areas of safety, ergonomics, accident reconstruction and analysis.