Keeping it Real – Preparing Students for Industrial Practice
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The pace of change in graduate education is accelerating. The goal of doctoral programs has been to train graduate students in their chosen research area at great depth and to create original knowledge at the frontiers of their field; while this is still necessary, it is no longer sufficient. Our doctoral students are preparing for an increasing diversity of career paths beyond academia. At MIT, approximately half of PhD recipients pursue careers outside of academia in industry, finance, consulting, startups, or a variety of other sectors. At MIT, 64% of Master’s of Science degree graduates enter non-academic sectors; 80% of Master’s of Engineering degree graduates enter non-academic sectors, and 97% of Master’s of Business Administration (MBA) degree graduates enter non-academic sectors. Our graduates are also more often changing disciplines and sectors throughout their careers.

Additionally, the advancement of research and technology is taking place at astonishing speeds, and specialized technical competencies learned during graduate school are more rapidly becoming outdated.

Hence, doctoral education as a whole is evolving past the classical “isolated apprentice model” where graduate students primarily interact with a single faculty (thesis) advisor. The future of graduate education can be more accurately described as a “networked apprentice model” where in addition to the thesis advisor, graduate students are supported by multiple mentors and are active participants in a vibrant community of scholars which enables them to be more engaged and rapidly interacting and connected to resources, information, their laboratory, their peers, their graduate programs, their university, their scholarly communities, and the world at large. This new model must involve training graduate students to
understand the knowledge they generate in a broad context (political, socioeconomic, national, global, cultural, etc.) and, furthermore, to develop a skillset to utilize and apply this knowledge for the benefit of society. Professional development, and specifically the acquisition of transferable skills, is critical to the future success and competitiveness of our graduates in this regard.

Business schools have long integrated the development of transferable skills into their curriculum and provided additional support structures through various co-curricular and community-building activities. The MIT Sloan Action Labs (http://actionlearning.mit.edu/), for example, combine traditional classroom learning with intensive real-world, practical experience. Students work on operational and strategic organizational challenges facing entrepreneurs in emerging markets, established multinational corporations, and NGOs and nonprofits tackling sustainable business and public health issues. As one example, the MIT Sloan China Lab (http://actionlearning.mit.edu/china-lab/) creates international student teams consisting of two MIT Sloan students and two Chinese students who work on a 3-month, mini-consulting project for a company. The company, working in collaboration with the students, sets the project focus and work plan, which includes the scope of work, timetable, and deliverables. Students begin their international collaboration virtually, using video-conferencing, project management, document-sharing and survey software. An MIT faculty mentor is assigned to each team and serves to support their interactions with the company.

At MIT we have hundreds of ad-hoc professional development events distributed across the Institute throughout the year, which are enormously popular and generally over-subscribed. My office, the Office of the Dean for Graduate Education (http://odge.mit.edu/), has begun to digitally capture many of these campus workshops and sessions and package them for on-demand online consumption by our students through a Professional Development Video Portal (or “PRO-DEPOT”) (http://odge.mit.edu/development/prodepot/). A library of over a hundred videos can be accessed any time of the day or night. Examples of current

We are now considering what a formal transferable skills program should look like, in particular for graduate students pursuing careers in STEM fields, through a Task Force on Graduate Student Professional Development (http://orgchart.mit.edu/node/11/letters_to_community/task-force-graduate-student-professional-development-tfpro) which will report out in December 2012. This Task Force will draw upon various resources, including an alumni survey to be administered during the summer of 2012, with the following objectives:

• To identify desirable skillsets for MIT masters and doctoral graduates in various disciplines and employment sectors,
• To identify core competency areas, and
• To formulate a comprehensive coherent set of professional development offerings, both face-to-face and online, for all MIT graduate students.

Some of the most important skillsets discussed by the Task Force include: communication, in particular conveying technical concepts to diverse audiences and persuasive communication; critical thinking and open-ended problem solving; frameworks for fostering creativity and innovation; ethics and integrity; leadership with uncertainty; collaboration in large multi-cultural an interdisciplinary teams; balance and resilience; and project management, including handling interdependencies and uncertainties.

I would like to describe one last professional development initiative we have initiated in collaboration with Imperial College of London, the Imperial-MIT Global Fellows Program, alternately carried out at MIT and at Imperial College. The Global Fellows program is a four to five-day intensive workshop focusing on an
introduction to the importance and development of transferable skills. It consists of three major programmatic elements:

1) A curriculum through a series of inter-dispersed practical lectures that gives a framework for transferable skills, including relevant research for example in cognitive learning and context for how skillsets relate to each student’s particular field and work;

2) Small group collaborative exercises and experiential activities which take the concepts learned in the lecture component, reinforce skills and “add experience and coherence.” For example, students form groups of 3-5 to develop interdisciplinary research proposals and posters, which draw on one another’s expertise and interests;

3) Feedback and reflection. Each day is a period of time for the students to process and discuss what they had learned. Students give each other feedback on their communication and leadership styles, allowing for a better understanding of how each student is fitting into the group, relating to his peers, contributing and making themselves understood.

All activities are timed, which keeps the students goal-oriented and cognizant of time-management.

Students are enthusiastically positive about the program: 92% of 2011 respondents rated the impact of the course as “Very High” or “High,” and 96% would recommend the course to another student. 96% either “Strongly Agree” or “Agree” that their knowledge and skills for collaboration have improved. 81% improved their creativity; 89% improved teamwork, and 81% improved communication skills. The students become more sensitive to communication styles and learn how to more effectively communicate in multinational teams by adjusting their own communication style to accommodate others. Students increase their self-confidence and learn to navigate new cultural norms and mores; they find they need to be assertive in order to overcome cultural and language barriers. They learn the importance of networking, its challenges in a multinational environment, and that
new strategies need to be developed for its most efficient use. The students were exposed to different academic, pedagogical, and scientific styles and varied organizational structures.

I have brought along a brief video to give you a more visual feel for the program.


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