

At MIT, the Humanities are just as important as STEM

By Deborah K. Fitzgerald April 30, 2014

The role of the humanities in American education has been the subject of much recent debate amid concerns that the STEM disciplines (science, technology, engineering and math) are eclipsing the humanities fields in relevance and career prospects.

So some may be surprised, and, I hope, reassured, to learn that here at MIT — a bastion of STEM education — we view the humanities, arts, and social sciences as essential, both for educating great engineers and scientists, and for sustaining our capacity for innovation.

Why? Because the Institute's mission is to advance knowledge and educate students who are prepared to help solve the world's most challenging problems — in energy, health care, transportation, and many other fields. To do this, our graduates naturally need advanced technical knowledge and skills — the deep, original thinking about the physical universe that is the genius of the science and engineering fields.

But the world's problems are never tidily confined to the laboratory or spreadsheet. From climate change to poverty to disease, the challenges of our age are unwaveringly human in nature and scale, and engineering and science issues are always embedded in broader human realities, from deeply felt cultural traditions to building codes to political tensions. So our students also need an in-depth understanding of human complexities — the political, cultural, and economic realities that shape our existence — as well as fluency in the powerful forms of thinking and creativity cultivated by the humanities, arts, and social sciences.

MIT's curriculum has evolved significantly over the past 50 years to require all undergraduates to spend substantial time on subjects like literature, languages, economics, music, and history. In fact, every MIT undergraduate takes a minimum of eight such classes — nearly 25 percent of their total class time.

In these classes, our students learn how individuals, organizations, and nations act on their desires and concerns. They gain historical and cultural perspectives, and critical thinking skills that help them collaborate with people across the globe, as well as communication skills that enable them to listen, explain, and inspire. They learn that most human situations defy a single correct answer, that life itself is rarely, if ever, as precise as a math problem, as clear as an elegant equation.

Some of the best testimony about the value of such an education comes from our science and engineering alumni. One recent graduate who went on to medical school wrote about how her practice as a physician requires not only medical knowledge, but also the ability to interpret her patients' accounts and stories — a skill she gained reading literature, studying the various forms of narrative, the many ways humans share vital information. "MIT biology prepared me for medicine," she says. "Literature prepared me to be a doctor."

Entrepreneurs also find a diverse skill set very valuable. One distinguished MIT engineering graduate and entrepreneur notes, "The introduction to philosophy and the history of ideas turned out to be the most enduring value and benefit from my education at MIT." Another engineering graduate who has transformed the electronics field says, "A broader education for a young person is more important than a specialty. When you learn about several disciplines, then you can start to connect them. I found my economics and history classes particularly useful."

A prominent MIT materials scientist graduate, who cites her MIT literature and art history classes as key to expanding her worldview, is now the dean of a college of engineering, with a frontline perspective on what engineers need to succeed in today's marketplace. She says, "Employers want students who can lead, work in teams, work across cultures, and especially communicate — and much of that ability comes from studies in literature, the arts, the social sciences. The world needs creative problem-solvers who can take into account the human perspective."

As educators, we know we cannot anticipate all the forms our students' future challenges will take, but we can provide them with some fundamentals that will be guides for the ongoing process of exploration and discovery. We can help shape their resilience, and prepare them to analyze and problem-solve in both familiar and unfamiliar situations. Calling on both STEM

and humanities disciplines — as mutually informing modes of knowledge — we aim to give students a toolbox brimming over with tools to support them throughout their careers and lives.

Whatever our calling, whether we are scientists, engineers, poets, public servants, or parents, we all live in a complex, and ever-changing world, and all of us deserve what's in this toolbox: critical thinking skills; knowledge of the past and other cultures; an ability to work with and interpret numbers and statistics; access to the insights of great writers and artists; a willingness to experiment, to open up to change; and the ability to navigate ambiguity.

The stakes are high these days — for individuals, societies, for the planet itself — and we cannot be complacent. The times are calling on us to quicken and share the world of ideas with all who yearn for more expertise, creativity, and meaning. And, the more we can re-invigorate education in alliance with our STEM colleagues, the better. For while we as educators may, for good and practical reasons, divide the spectrum of knowledge into various categories, the mind itself is the original polymath — drawing on diverse, and often surprising, sources as it goes about the wondrous work of making fresh connections, and laying down new pathways for thought, discernment, and action.