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Staff photos Rose Lincoln/Harvard News Office

Elena Rothstein (from left) of Lincoln Sudbury Regional High School works with Shanera Lindsey and Eloisa Lopes of Natick High School during a treasure hunt.

Remapping expectations: Girls find way to engineering

By Michael Patrick Rutter
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For young women, the way into engineering may begin with a celebrity sighting (of the academic kind), a face-off with a busted pinball machine, or even a casual crush. While math and science remain the sine qua non of a field most readily defined by hard hats, pocket protectors, and Dilbert-like characters, chance encounters, passion, and — gasp! — fun, often play an equal role in putting engineering on the map.

Held at Harvard's Division of Engineering and Applied Sciences (DEAS) on May 3, Introduce a Girl to Engineering Day, a nationwide effort in its sixth year, aims to do more than simply live up to its title. Organizer Judy Nitsch, president of Judy Nitsch Engineering Inc., said the goal "is to reach over 1 million girls in the sixth to 12th grades" and ultimately inspire them to study or pursue engineering as a profession.

To learn more about the event,
http://www.eweek.org/site/News/Eweek/girlsday.shtml

Assistant Dean for Academic Programs at DEAS Marie Dahleh kicked off the half-day event, subtitled "Mapping Your Engineering Career," by revealing an intellectual blind spot on the academic landscape. "Engineering is, of course, about being good in math and science ... but it is about something else," she said to the audience of more than 100. "Passion. You have to love to do what you do."

To prove her point, Dahleh cited three pioneers: Lillian Gilbreth (1878-1972) re-engineered the kitchen (including the foot-pedal trashcan) to make her life and lives of millions easier; Grace Murray Hopper (1906-1992) developed one of the first computer language compilers while at Harvard to transform mind-numbing binary coding into something more like English; and Florence King (1870-1924), the first woman to win a Supreme Court case, had the foresight to become an expert in the emerging field of patent law, combining her law and mechanical engineering degrees (both earned at night school).

"Engineering is not necessarily physical, but a way of thinking. What drove them to do what they did was their desire to make things better," Dahleh said. Take away the traditional trappings of the profession, she explained, and you are left with a single principle: designing under constraints.

During the GPS treasure hunt on the Law School Quad, intrepid future engineers from middle and high schools around the Boston area are on the move. Adagray Anderson, 11, (right) and Molly Doris-Pierce, 12, (third from left, in stripes) disagree about which direction to take.

A panel of five female professionals, experts in areas as various as business, chemical engineering, and environmental law, echoed that philosophy as they explained how they were first introduced to engineering. Their stories evoked the greatest response from the parents in the audience, many of whom could be seen nodding in agreement or whispering, "See, you *can* do it" to their daughters.

"Yo, dude, I'm just trying to pass eighth grade," Ling Wong, one of the speakers, recalled saying to Massachusetts Institute of Technology (MIT) Professor Robert S. Langer, a founder of modern chemical engineering, who offered her advice on a required junior-high science fair project. Several years later Wong not only spent a summer in Langer's lab but enrolled at MIT as an undergraduate. Today, the Harvard Ph.D. candidate investigates novel drug delivery methods and keeps in close touch with the "dude," whom she now counts as a friend and colleague.

Stephanie Pollack, a real estate lawyer originally trained as an engineer, shared how, when she was younger, her father presented her and her three brothers with an exasperating gift: a busted pinball machine. "It was the analog kind — way before digital," she said. "If we wanted to play it, we had to figure out how to fix it." In two months' time the machine blipped into life and she was hooked on the fundamentals of design. The classic machine, which her two kids now have, still works.

With a bit of a blush, Mary Neuner Caravella M.B.A. '00 said that she "became an engineer because of a cute boy." Undecided about her major at Marquette University, she switched to engineering so she could live in the same dorm as a guy she had a crush on. Her true love, however, ended up being the community of scientists and engineers she lived with. "In fact, he and others became my mentors," she said. For purely academic reasons, Caravella assured the audience, she is now pursuing a Ph.D. in business administration at Harvard.

The event concluded with a GPS [global positioning system] -based treasure hunt on the paths of the wet, soggy, and newly seeded Law School lawn. Teams of two used either handheld wi-fi devices or traditional maps to discover clues that could be used to open a locked briefcase containing prizes. The rules of the adventure hinted that finding a path inevitably requires going beyond the obvious "X marks the spot" protocol: The groups must all work together to solve the puzzle. You can take many paths to reach the goal.

As for the map of their future careers as engineers (or as anything for that matter), finding their way likely depends more upon seeking a clever way out when lost or encountering a human guide than on a geeky gadget. Of course with a team of successful female professionals merely steps away, the young women have a great chance of starting off in the right direction.

The event was sponsored by the Harvard University Marshal's Office and the Harvard Division of Engineering and Applied Sciences.