WISE Move in Mentoring

To encourage more young women to become engineers and scientists, Johns Hopkins and Garrison Forest School are teaming up in an unusual partnership.

By Sarah Achenbach

What if? It’s a question of possibilities asked every day by Whiting School of Engineering faculty and students. It’s one that drives alumni long after they’ve left the labs on campus. It’s a question William E. Ward Jr. ’67, chair of the Whiting School’s National Advisory Council, had thought about regarding the under-representation of women as applicants and students in engineering schools across the country.

“Nationally the participation rate [for women] is about 25 percent of the students in engineering,” Ward explains. “This is in spite of the fact that women now represent [more than half] of graduating college seniors…and are very successful when they do attend engineering schools.” Among the critical factors in secondary schools, Ward cites the gap between boys’ versus girls’ level of interest—and encouragement—in science and mathematics and the need for more exposure of secondary school students to engineering.

Ward, along with Whiting School faculty and their science colleagues in the Krieger School of Arts and Sciences, are addressing this void with an unusual program and partnership. Next September, the Whiting School will welcome its first class of high school students to the Women in Science and Engineering (WISE) program, a first-ever partnership with Garrison Forest School, an independent boarding and day school for girls in Owings Mills, Maryland.

Like most questions that begin with what if, the idea is simple. Take 14 Advanced Placement-level juniors with an interest in science. Pair each of these students with a Johns Hopkins science or engineering professor for one-on-one mentoring. Put them in the middle of the action in the Whiting and Krieger labs, lectures, and department seminars for one semester, three afternoons a week, working side-by-side with professors and graduate students on world-class science. Then watch the possibilities expand for these young women.

In fall 2003, while Ward was thinking how best to tackle the challenge of increasing the number of female engineering students at Hopkins and nationwide, Garrison Forest was exploring ways to create an academic partnership with a research university. Ward’s wife, Debbie, is a board member of Garrison Forest, and their daughters Kristen and Kim graduated from the school. When Debbie Ward shared the school’s hopes with her husband, he seized the opportunity. The next time he saw G. Peter O’Neill Jr., head of Garrison Forest, Ward posed the idea of partnering with the Whiting School. O’Neill was delighted. “We had been thinking very definitely about Hopkins, and science was a particular interest of ours,” says O’Neill. “Science is the new literacy for women in the 21st century and essential to their success academically and professionally.”

Ward is just as pleased to see his thoughts in this area become a reality. “It’s been wonderful to stand on the sidelines and watch these two organizations get together and create what I hope will be an opportunity for young women nationally,” he says.

Although both institutions are equally enthused about the program’s potential, O’Neill recalls the initial reaction when he floated the concept of identifying Whiting School female professors as mentors. It was during his first phone conversation with Ilene Busch-Vishniac, at the time dean of the Whiting School, and Daniel Horn, assistant dean for academic programs. “Dan paused and said ‘I don’t know if we have enough [female] professors,’” recalls O’Neill. “I said, ‘Then clearly there’s a need for the program.’” Ten percent of Whiting School tenured or tenure-track faculty members in 2003 were female, which Horn notes is “in the range of Hopkins’ peers.”

The small number of women professionals in science and engineering is no longer considered breaking news, but the gender gap continues to make headlines. In January 2004, The New York Times reported that while more women are earning doctorates in science and engineering, females remain scarce in tenured or tenure-track faculty positions, noting that “only 3 to 15 percent of full professors in top engineering and science departments are women.” Busch-Vishniac, professor of Mechanical Engineering, believes the WISE program offers an excellent opportunity to address this pressing challenge. “The problems of gender diversity in

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science and engineering have proven to be extremely tough to overcome both nationally and internationally,” she says. “WISE moves diversity efforts to a younger population, where we have a greater chance of having an impact.”

Other female faculty members at Hopkins shared Busch-Vishniac’s enthusiasm for mentoring the next generation of women scientists, as Horn quickly discovered. The memo he sent outlining WISE to some well-established female faculty members struck an immediate chord. “Every one of them came back with an unqualified yes,” recalls Horn. Mandy J. Ward, assistant professor of Geography and Environmental Engineering, credits the overwhelming interest to each woman’s background. “I suspect that all of us who have embarked on a career in science have had at least one outstanding mentor who encouraged us to ask questions and explore those aspects of science that most interested us,” she says. “Now it’s our turn to give advice and encouragement to young girls in the hope that they, too, will decide that an early enjoyment of science and engineering can fuel a long and enjoyable career.”

Male professors also will have an opportunity to mentor and to have a Garrison Forest student as part of a university-level research team. Says Horn, “Our male professors are just as concerned about seeing young women succeed.”

Garrison Forest is busy recruiting locally, nationally and internationally for the first WISE class. Accepted students will become immersed in science by doing, not just observing, during their afternoons at Hopkins while receiving high school credit. They’ll enjoy a regular high school experience as members of Garrison Forest’s international, residential community and through its range of science and humanities classes. Through WISE-sponsored, faculty-led field trips to research facilities such as the Space Telescope Science Institute and the National Institutes of Health, the WISE students will talk with more women scientists on the leading edge of research. Recognizing the potential for the program to become a national model, the France-Merrick Foundation contributed a $200,000 lead gift to Hopkins for WISE, while the Edward E. Ford Foundation is supporting Garrison Forest through a two-to-one challenge grant, which when matched, will provide $150,000.

WISE is a program in which everyone wins, Busch-Vishniac explains. “The creation of vertical teams of students from high school through to graduate students and postdoctoral students always enhances the learning of virtually all team members,” she says. WISE “encourages the more senior students to learn how to teach while the more junior students learn how to contribute.” She quickly points out that a student’s age has no bearing on her ability to contribute. “Don’t underestimate the potential accomplishments of these students. Research breakthroughs are not age-linked. I’ve seen high school students make amazing progress, partly because no one told them they shouldn’t be able to compete yet.”

Notes Andrea Perry, Garrison Forest’s dean of students and director of the WISE program, “We’re thrilled about the school-wide benefits of WISE. Through this partnership, Hopkins faculty will help us assure an outstanding science education for all our students. Hopkins faculty will consult on curriculum, lab design, and professional development for our faculty, as well as mentor students through lectures, assemblies, and experiential activities, plus parent sessions on cultivating science and math abilities.”

“This is an outstanding opportunity for girls to explore opportunities in engineering,” explains Lori Valenti, chair of Garrison Forest’s science faculty. “Through WISE, they also gain maturity as they prepare for college through their interaction with Hopkins professors and students.” Bolstering recruitment, in fact, is a key benefit for both institutions. Adds Horn, “We hope the WISE students form a relationship with their mentors and would seek to continue that relationship as Hopkins students.”

As with any experiment, Hopkins and Garrison Forest will track the program’s impact on encouraging more young women to enter science and engineering. Essential to this assessment—and to any scientific endeavor—are those critically important, yet naturally intangible moments of discovery. “The joy of learning something no one has known before is hard to express and leaves a lasting impression,” affirms Busch-Vishniac. “I am looking forward to those ‘ah-ha’ moments when someone who wasn’t expecting it has discovered something new, and it changes her life forever.”

Visit Garrison Forest School’s WISE web site at www.gfs.org/index.cfm?page_id=301.
First Two Schwarz Instructors Named

A luncheon on October 24 honored the two inaugural recipients of the William H. Schwarz Instructorship in Undergraduate Chemical Engineering Laboratory. They are Meredith Bauman (see a profile of her on page 26) and Kelly Hardesty, both of whom are PhD students in Chemical and Biomolecular Engineering.

The Schwarz Instructorship fund was established in 2000 by 10 alumni from the Class of 1953 and one from the Class of 1956 to honor their former instructor, William H. Schwarz ’51, ’55 MS, ’57 PhD. Schwarz, who died in 1995, was committed to making the Chemical Engineering Laboratory a defining moment of undergraduate education. The Schwartz Fund supports the graduate students teaching this pivotal course.

Chemical and Biomolecular Engineering PhD students Meredith Bauman (left) and Kelly Hardesty are proud to have their names lead off the list of those honored with the Schwarz Instructorship.

Northrop Grumman Networks with Students

Fifty Whiting School of Engineering students and 15 Northrop Grumman Electronic Systems engineers networked last fall at the company’s second annual student mixer, held on November 2 at the Johns Hopkins Club. Senior representatives from Northrop Grumman, the nation’s third largest defense enterprise, discussed internship and career opportunities with the students, who also had a chance to speak with several of Northrop Grumman’s new hires who are alumni of the Whiting School. The company’s representatives introduced themselves and briefly described their roles. The mixer primarily attracts students from the departments of Computer Science, Electrical and Computer Engineering, Materials Science, and Mechanical Engineering.

As part of its collaboration with the Whiting School, Northrop Grumman sponsors a Senior Design project, two graduate fellowships, and several research projects.

Northrop Grumman Electronic Systems, headquartered in Baltimore, is one of the company’s seven sectors and is a world leader in designing, developing, and manufacturing advanced electronics and systems for military, civil, and commercial use. Other regional operations include Information Technology, headquartered in Herndon, Virginia, and Mission Systems, headquartered in Reston, Virginia. The Los Angeles-based company has operations in all 50 states and in 25 countries.

Rob Spiller Promoted to Associate Dean

Robert J. “Rob” Spiller has been named associate dean for development and alumni relations in the Whiting School of Engineering, effective January 10. For the past three years, he served as the founding director of the Regional and International Programs in the Office of Development and Alumni Relations. Under Spiller’s leadership, this office has become a successful and integral part of the overall development program at the Johns Hopkins University. Before joining Hopkins, Spiller spent seven years at Yale University as a major gift officer. He earned his bachelor’s degree at the University of Illinois, and his master’s degree in international relations at the University of Virginia.

Debra Lannon, director of development, served as interim associate dean after the departure last fall of Michael D. Moyer to pursue other professional opportunities. The Whiting School honored Moyer at a reception on October 26 for his successful decade at the helm of Engineering development.