

RECRUITING AND RETAINING WOMEN GRADUATE STUDENTS: SUPPORTING EFFORTS AT THE DEPARTMENTAL LEVEL

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ABSTRACT

The Program for Women in the Institute of Technology (WIT) at the University of Minnesota (UM) supports departmental efforts in recruiting and retaining women graduate students by funding women graduate assistants (GAs) to serve in individual departments during winter quarter. Each GA reports directly to her department while receiving training and funding from WIT. The goal is to maximize individual success and a climate of cooperation among women within and between departments.

INTRODUCTION

The challenges facing women graduate students in science and engineering are typically identified in quite personal terms, but the strategies for overcoming them may require shared information and collaborative responses as well as institutional intervention. Numerous studies have shown that the drop-out rates of women are higher than those of men and that, even as women move up the academic ladder and must participate in more collective enterprises, they often encounter dissonance with male colleagues, both fellow students and faculty members.¹ Intervention programs must thus help women students identify and articulate their concerns in a safe environment, present them with opportunities to network, and provide resources to change the circumstances that threaten to impede their progress and may lead them to drop out of science and engineering altogether.

The Program for Recruiting and Retaining Women Graduate Students (RR) presumes that programs must not rely solely on volunteers but provide a stipend for those who build infrastructures and run programs. It has developed over five years into a highly focused program -- funding quarter-time graduate assistants in each of eleven departments during winter quarter -- that involves a multilayered set of activities. Recruiting and retention have proven to be highly interconnected; for example, graduate women volunteers are part of recruiting efforts that range from telephone calls to informal lunches during a campus visit. These events have an impact on retention as current students reiterate their decision to take a graduate degree and gain confidence through their growing numbers.

BACKGROUND

The Institute of Technology (IT) includes eleven departments in the physical sciences, engineering, mathematics, and computer science.² Specific efforts in support of recruiting and retaining women students and faculty were started when Sally Gregory Kohlstedt became Associate Dean (AD) in the fall of 1989, leading to establishment of a full-time director of WIT in 1993.

Women across UM are supported by a number of centralized efforts, including a strong Commission on Women and the MN-WISE electronic listserv (operated from the WIT office).³

The RR program had its origin in the fall of 1990, when the Head of the Department of Mechanical Engineering (ME) agreed to share the cost of a graduate student (at 10 hr/wk research assistantship rate) to work with the AD in developing a program to recruit more women graduate students. The graduate student contacted all seriously prospective ME women students by letter and telephone as their applications were received and used Society of Women Engineer chapter lists to distribute informational brochures. Meeting weekly, the student and AD discussed issues for graduate women, held informal lunches with students and the two women faculty members, and developed other activities to address such concerns as career planning and balancing personal and professional lives. They strategized to liberate one of two men's bathrooms on a floor that had none for women and to provide safe parking at night using empty faculty spaces. The experience created a cohort of women in ME who found themselves working and relaxing together.

With that model in mind but unable to persuade other departments to make such an investment, the AD arranged for funds to provide a similar assistant for one quarter for each of the departments in the IT. Some departments resisted. The DGSs worried about the access to records, department heads indicated they would prefer to have the modest funds (then averaging about \$1500) for their own discretionary spending on travel money for prospective students or for student research stipends, and skeptics questioned this "special" treatment for women. Nonetheless, the plan was implemented in winter quarter 1991 and within two years all departments were participating. Recruiting more women, some from prestigious schools, who indicated that they chose to come to Minnesota because the atmosphere seemed better for women here than other schools they visited led even skeptics to shift their opinion in a positive direction. Key to acceptance was the perception of customized programs that fit the differential cultures and perceived needs of individual departments.

Strategic players, particularly department heads and admissions committees, were consulted and kept informed. They retained the right to select their candidate for the position. Of critical importance too, were the staff members who managed the enormous record keeping involved with inquiries and responses to prospective students and processed applications to the point of admission. By the third year of the program, the AD was meeting with these largely invisible staff members to discuss current WIT goals and to solicit their comments and suggestions. An informal "training program" evolved for staff and students to learn some basic WIT expectations and to share their triumphs and frustrations. College-level functions served to bridge the disciplines, including a fall reception, a monthly pizza lunch, and some institute-wide panels and seminars. This contributed to the visibility of the WIT and the AD who could be consulted and take action on behalf of individuals facing problems beyond departmental oversight.

PROGRAM DESIGN

A quarter-time GA for winter quarter in each department in IT assists with recruiting and retention activities directed toward women. WIT provides coordination of the program and training of the GAs. Each GA reports directly to her department's DGS and works with departmental admissions staff. Funding for stipends is provided by IT administration, through the WIT, to individual departments (stipends averaged \$2,281 in W95, ranging from \$2,042 to 2,692; total allotment \$24,600).

Notable features of the program include: personal contact ("high touch"); customization by department; "ownership" by department DGS and staff; GA interdepartment support and synergy; GA professional awareness and advocacy; and integration of recruiting and retention efforts.

Timeline

The program timeline begins in fall with requests to departments to appoint a GA, budget transfers of stipends, and the first quarterly meetings with departmental admissions staff. In November, new GAs meet individually with the WIT Director; meetings with the DGS and departmental staff are scheduled on a selective basis. In December, the GAs meet as a group for a program briefing, and begin their recruiting activities. A second quarterly meeting with admissions staff is held in January. During winter quarter the GAs are active with recruiting and retention activities in their departments, with campus visits continuing into spring. In April, the third quarterly meeting of departmental admissions staff is held, and final reports and evaluations are completed.

Although the GAs are paid a stipend during the winter quarter, their activities often overlap with fall (e.g., list preparation) and spring quarters (e.g., campus visits). The five training/update meetings are held in January and February. The GAs work a total of 110 hours, scheduled flexibly to meet departmental and personal agendas, and keep a log of their hours and activities.

Recruiting

Each GA meets with her DGS and admissions staff to determine work times, space, resources, and other arrangements. The GA also learns about the department's priorities, procedures, and schedules as well as practices regarding recruiting, inquiries, applications, admission criteria and selection, fellowships, assistantships, financial aid offers, and campus visits.

The GA's may compile lists of prospective women graduate students (e.g. inquiries, applicants, acceptances); contact prospects by mailing a letter of introduction and following up with phone or E-mail contact; answer questions, find information, make introductions; encourage and arrange campus visits, including meetings with women and area-of-interest faculty and women graduate students, campus and city tours, and social/recreational activities; and increase inquiry pool via mailings/visits to women's and historically black colleges, professional networks, and other groups. Targeted UM undergraduate recruiting activities include a personal letter to top women students and seminars regarding graduate school options.

Retention

An important part of this Program is the potential for improvement of departmental climate. Two features are key to retention efforts: 1) the GA is an insider and is well-placed to learn about and understand the culture and dynamics of her department; and 2) as a graduate student herself, the GA has personal experience and is connected into student activities and the grapevine.

Network building among students is at the core of retention activities, facilitating later gathering for events, sharing of concerns, and mobilization for change. While most GAs start with a focus on graduate students, they often extend their efforts to women undergraduates and faculty, and to men students and faculty, depending on departmental needs. Women faculty generally are supportive and willing to participate.

Specific retention activities initiated by GAs include mailing lists of women graduate students, undergraduates, and faculty in the department; women's bulletin board; professional and/or social networking events; women peers involved in campus visits by prospective students; hallway/lab reminders about WIT; organization and voice for advocacy at departmental and collegiate levels; and collaboration with other departments and WIT.

Training and Support

In choosing its GA, each department identifies an interested woman in her second year of graduate study or with an undergraduate degree at UM. The resulting group of GAs varies in their

awareness and experience of WISE issues, backgrounds, departmental cultures, personalities, lifestyles, and politics. Some of the GAs come into the position unclear about the need for this program; they certainly hear such comments from others. Moreover, many of the GAs need ideas and tips on actual recruiting and retention tactics, planning and scheduling, and partnering with departmental faculty and staff.

To address these issues, the WIT holds a series of five "bag lunch" training and support meetings during winter quarter. Each regular meeting includes a round-the-table update on what's happening, new ideas, and any successes/challenges as well as discussion about the day's topic. The sessions are kept casual, non-threatening, and participatory; the intent is that the GAs form a self-directed support and idea network.

Meeting topics include: 1) welcome, overview, WISE resources at UM and IT; 2) contacting prospects and campus visits; 3) retention issues and activities; 4) GA choice of topic; 5) report and evaluation timeline. Resources provided include past GA reports and statistics, literature review (bibliography and articles)⁴, campus visit materials (e.g., info about department, campus, Twin Cities), and samples of recruiting letters.

Departmental Partnership

The success of this program is dependent on the assistance, if not full collaboration, of each department's DGS and graduate admissions staff. It is important for the WIT to know the faculty and staff, understand internal and external influences on departments, and have opportunities to share its vision with the departments. Departments vary greatly in their systems for and success in recruiting and admitting graduate students.

For these reasons, WIT organizes two types of meetings of the Director with departmental staff: 1) quarterly meetings with admissions staff members across departments to facilitate their sharing of admissions systems, processes, successes and challenges (topics might include computer software, inquiry information packets, Visas); and 2) winter quarter meetings with individual departments, including the DGS, admissions staff, and GA. This latter meeting provides an opportunity for observing the relationships among staff members and the GA, and for strengthening communication and/or problem-solving if necessary.

RESULTS AND DISCUSSION

Program impact is measured through written evaluation forms completed by the GAs, DGSs, and admission staff as well as through review of admission and graduation data. Evaluation responses and anecdotal information generally support program efforts while offering suggestions for improvement. Data from a number of quantitative measures by department, over time, and compared to national figures (enrollment, number and percentage applied admitted and enrolled, degrees granted) offer less clear evidence of improvement over the past five years.

Summary of Recruiting Efforts

In the past two academic years, the GAs contacted more than 700 prospective applicants by phone, letter, and electronic mail. They arranged 77 campus visits for women, averaging 3.5 women per year per department. Negative factors influencing recruiting success in some departments included limited commitment to "cold" recruiting, delayed acceptances, lack of campus visit funding, uncertainty about gender of international student names, rigid admissions guidelines, and amount of paperwork assigned to GA.

Changes in graduate enrollment data from Fall 1990 to Fall 1994 indicate overall departmental increases in the number and percentage of women enrolled as Ph.D. candidates, with M.S. degree candidates showing virtually no overall change.⁵ Analysis of program impact on

enrollment changes is complicated by a number of factors, including small number of women, lack of cohort data, five-year time line required for doctoral degrees, changing enrollments of men (especially at M.S. level), employment trends, and climate influences (e.g., faculty/staff and budget changes).

Evaluation

Responses from the GA evaluations in 1995 indicate an overall positive effectiveness of the program (on a scale of 1-5: recruiting=3.6, retention=3, and improving climate=3.4) and strong belief that it should be continued (4.2). They generally feel their efforts are important, citing their active "reaching out" role in contacting and welcoming prospective students and their visibility as a department leader in WISE efforts (two GAs continued for a second year). At the same time, many of the GAs were uncertain of their impact, usually related to department-specific conditions (e.g. admission delays, low student event attendance). They reported that the training and support meetings were useful (3.8) and that the WIT Director and IT Associate Dean were effective in their supervision and training (4.6).

Regarding departmental acceptance and support, the GAs generally felt that their position was positively viewed by both male and female graduate students as well as faculty in their departments. They received good cooperation from the department in general and the DGS (4.1) and exceptional cooperation (5) from the secretarial staff. This successful partnership of every GA is notable because the secretarial staff is usually highly instrumental in the success of recruiting efforts. The provision of a funded GA to assist the DGS and department staff undoubtedly builds good will towards the other WIT and WISE programs.

Evaluations by the DGS indicate overall satisfaction with the program (60%) and belief that it should be continued (80%). Here again departmental differences are evident, reflecting large versus small student numbers, availability of funding for campus visits and student assistantships, and market forces (e.g., "fierce competition" for top women students).

CONCLUSIONS

Although data based on recruiting and overall enrollment over five years is inconclusive regarding retention, the RR program has generated considerable activity in every department and has, it appears, had a significant impact on the climate for graduate women in science and engineering.⁶ Future planning will include more targeted recruiting to increase visibility in regional colleges and to enhance diversity through national initiatives; use of departmental resources that will supplement those of WIT; programs to improve the timing and effectiveness of admissions and financial aid awards; and enhanced training meetings.

NOTES

¹ One of the earliest commentaries was Sheila E. Widnall's AAAS Presidential Lecture, "Voices from the Pipeline," *Science*, 241 (1988): 1740-1745. More recent data is summarized in Angela B. Finorio, *Warming the Climate for Women in Academic Science* (Washington, D.C.: Association of American Colleges and Universities, 1995).

² Engineering Workforce Commission, *Engineering & Technology Enrollments* (Washington, D.C.: American Association of Engineering Societies, Inc., 1994) and Betty M. Vetter, *Professional Women and Minorities*, Eleventh Edition (Washington, D.C.: Commission on Professionals in Science and Technology, 1994). UM percentages of enrolled women/total are in engineering: 20.5%UG, 16.9% MS, 14.1% PhD; and in physical sciences, mathematics, and computer science: 25.9% UG, 24.9% MS, and 22.5% PhD (Fall 1994; mirrors national levels).

³ Janet Spector, Guide to Improving the Campus Climate for Women (University of Minnesota: Commission on Women, 1993); The Minnesota Plan II: 1995-2000: Recommendations to Increase the University Community's Capacity to Improve the Campus Climate for Women; and Noel N. Schulz, Wendy C.C. Grebner, Sally Gregory Kohlstedt, "A Proactive Approach to the Retention of Women Graduate Students," University of Minnesota, 1994 ASEE Annual Conference Proceedings (Edmonton, Alberta, Canada, June 26-29).

⁴ Literature readings are drawn, for example, from the following publications: Deborah C. Fort, ed., A Hand Up: Women Mentoring Women in Science (Association for Women in Science (AWIS), 1993); Committee on Institutional Cooperation (CIC) Conference Proceedings (1992); "Women in Science 1993: Gender and Culture," Science, 260 (16 April 1993): 383-429; "Women in Science 1994: Comparisons Across Cultures," Science (11 March 1994): 1467-1496; and Women in Engineering Program Advocates Network (WEPAN) National Conference Proceedings (1994).

⁵ The results varied, with six departments showing increases at the Ph.D. level but not the M.S. Other shifts were more dramatic: Electrical Engineering added 13 M.S. and 3 Ph.D. women for a 5.3 to 12.5% and a 9.7 to 14.0% increase, respectively; Chemistry added 19 Ph.D. women, from 28.3 to 31.4% increase. Astronomy and Physics showed no significant changes in enrollment. Chemical Engineering and Math/Statistics showed decreases in women doctoral candidates while Computer Science showed decreases in women at both levels.

⁶ In addition to the previously mentioned IT wide and recruiting and retention activities, the GAs designed a number of specific projects in response to expressed departmental needs. These include a leadership seminar in Aerospace Engineering; a WISE library shelf in the study lounge in Physics and Astronomy; a discussion on the oral exam for 2nd year students in Chemical Engineering and Materials Science; a half-day career workshop and weekly mingle hour in Chemistry; a UM-WISE electronic home page in Computer Science to overcome their small numbers (34/261 in EE, 27/219 in CSci); off-campus party for undergraduates in Geology/Geophysics; career panel with alumni and undergraduates in Mathematics; and a handbook on "Questions to Ask Yourself When Selecting A Graduate School Thesis Advisor" by Mechanical Engineering GA. The GAs for 1995 were Rosamond Dolid, Sheryl Foss, Andrea L. Gothing, Ann Gronda, Beth Guldán, Sarah Heymer, Kendra Killpatrick, Laura Kletti, Michelle Markley, and Maria Martin-Aguirre.