



A Proposal to Recruit Underrepresented Groups into Information Technology Careers

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ABSTRACT

The term underrepresented groups in this paper include: Women, African Americans, Hispanics, and Native Americans. This is an example of a concept paper created for Caterpillar Foundation by one of their twelve "super" schools. Caterpillar Inc. has recognized twelve universities as "super" schools. The "super" schools identified by Caterpillar are universities they want to develop strong relationships with, donate money to and recruit from. However, they will continue to recruit at other universities not identified as "super" schools. The twelve super schools identified by Caterpillar Inc. are: Purdue University, University of Texas at Austin, North Carolina A&T University, Illinois State University, Bradley University, Southern Illinois University, University of Illinois at Champaign, University of Illinois at Chicago, Florida A&M University, Texas A&M University, University of Michigan and Georgia Tech University. One area that is important to Purdue University and Caterpillar Inc. is the recruitment and retention of students/employees that fall into the underrepresented group. This is a proposal that is being developed by Purdue University that will be submitted to Caterpillar Inc. to help all parties increase the number of students/employees that fall within the underrepresented group.

INTRODUCTION

As part of its Strategic Plan, Purdue University supports and encourages diversity of its students, faculty, and staff. The Schools of Engineering and the School of Science, with historically low female enrollments, currently sponsor substantial programs aimed at recruitment, retention, and graduation of women students. These programs are Women in Engineering and Women in Science.

Increased enrollments of underrepresented populations have been identified by the Computer Technology (CPT) Industrial Advisory Committees as a strategic departmental priority. The following proposal is targeted to increase the underrepresented student populations in CPT by 2007.

The Computer Technology Department, which is housed within the School of Technology at Purdue University, respectfully requests \$25,000 per year over five years from the Caterpillar Foundation for the purpose of targeted recruiting of female and minority high school graduates directly to the CPT program at the West Lafayette campus.

Because Caterpillar knows the importance of diversity in the work force, CPT requests that Caterpillar partner with us in our efforts to recruit more women and minority students. Our common goal is to increase the number of potential female and minority hires into the information technology workforce.

The Compelling Need

Purdue's School of Technology consists of eight departments; seven of them are technologically oriented while the eighth, Organizational Leadership and Supervision (OLS) is human resource focused. As indicated in the table below, the School of Technology enrolls 15% women

students, the lowest enrollment of women students of all the Schools at Purdue. However, when OLS is removed, the percentage of women students in technologically oriented disciplines falls substantially lower.

Undergraduate Female Enrollments by School at Purdue University, Fall 2001

School	Percentage of Women
Veterinary Medicine	99%
Education	82
Pharmacy, Nursing, & Health Sciences	76
Consumer and Family Sciences	69
Liberal Arts	62
Agriculture	46
Management	36
Science	35
Engineering	18
Technology	15
(Technology without OLS)	10)

Sources: Office of the Registrar and School of Technology, Purdue University

Despite the growth of career opportunities for women in all areas of technology and heavy efforts to recruit women into technology-related fields, Purdue University's School of Technology lags behind Science and Engineering (both of which have excellent programs to support women students) in percentage of women enrolled. Additionally, the School of Technology experienced no growth in the proportion of women students enrolled during the most recent five-year period. Female enrollments in CPT have declined from 20% in 1997 to 17% in 2000. Other minority enrollments make up less than 10% of the student body. Given the severe worldwide shortage of information technology graduates, there is a pressing opportunity to expand enrollments in underrepresented groups.

BACKGROUND OF THE PROBLEM

"Where are women and girls in science, engineering, and technology?" asks a July 2001 report released by The National Council for Research on Women. The past two decades saw the implementation of a variety of programs that succeeded in attracting more women into the fields of science, engineering, and technology. Many of these women are now in highly visible positions. However, although women constitute 51 percent of the population of the United States and 46 percent of the labor force, only 23 percent of those who are employed in this country as scientists and engineers, across all degree levels, are women

(Mervis, 2000; National Science Foundation, 2000).

Women and girls will comprise at least half of the available science, engineering and technology talent pool. Therefore, it becomes imperative not only to attract but also to retain women and girls in these disciplines. However, there are both individual and structural factors discouraging women's access to science and closely related fields (Fox, 1996). These factors include societal definitions of gender appropriate work, an educational system that channels women away from these disciplines, obstacles that disproportionately confront women in science, engineering, and technology, and gender-based inequities in educational resources and opportunities in those disciplines.

Today, there is a dearth of young women enrolled nationwide in secondary school computer science advanced placement classes. Their absence does not appear to stem from disinterest in computers but rather from applications that seem more attuned to the interests of boys (AAUW, 2000; Molad, 2000). Hence, young women entering colleges and universities in the areas of science, engineering, and technology are disadvantaged by their lack of computer experience (Sanders, 1995). They also appear to have career goals that are not as well defined as those of their male counterparts, and often lack confidence in their abilities (Astin & Sax, 1996; Vetter, 1996). They encounter college and university classes that are unfriendly to them, impeding their learning. The absence of women faculty and mentors both within the classroom and outside of it, few women peers in their classes, and the lack of supportive networks can create a "chilly climate" for women in non-traditional fields. It is during this critical period that many of them transfer into other fields (National Council for Research on Women, 2001; Seymour, 1999; Hanson, 1997; Seymour & Hewitt, 1997; Astin, 1993).

PROJECT DESCRIPTION

The project calls for women and minorities currently enrolled in the CPT program to assist recruiters at various authorized recruiting functions. With the dominant portion of this funding going directly to the student role model recruiters, the funding provides two great benefits. First, it provides the means to travel to reach the young students in the targeted audience; and second, it provides income support for the student recruiters.

Current female and minority CPT students will be recruited to serve as assistants to help the department initiate and plan recruiting policies. The current CPT minority faculty members and others designated by the Department Head will devise a plan and work with the selected student recruiters to formulate the best strategy to recruit minority high school graduates.

The ability to travel to interact with young underrepresented populations is necessary in order to "advertise" and to provide "role models" for what career possibilities exist for young women and minorities who might otherwise not think of a technical career. Repeated research studies conducted for over a thirty-year period continue to demonstrate that young people need positive role models representing career choices. This helps them to overcome their own biases and stereotypes about their potential to work in technical careers.

The most successful approach to helping women and minorities to understand the exciting opportunities available to them in technical careers is to make direct contact with them, using other young women and minorities who have chosen technical careers. The recruiting role models provide a tangible means of overcoming the young students' fears. Professional recruiters, schoolteachers, and university faculty are only somewhat effectual at this. When the recruiter is another young woman or minority, closer to the age of the targeted recruits, the ability to break down the inhibitions is much greater. Positive results have been seen when Purdue students, who are currently working with industry, are put in a position to meet face-to-face with elementary, middle and high school age students.

In addition to recruiting, the project requests funds to create scholarships for outstanding women and minorities to enroll in Computer Technology. New admits will automatically be considered for freshman year scholarships based on admission criteria such as SAT scores and

class rank. The intent is to get these students into the program and get them excited about information technology career opportunities.

To date, most scholarships target students who have already been enrolled for one or more semesters. Empirical evidence suggests that minority enrollments will increase if the department can offer greater financial assistance during the admissions process. Accordingly, Caterpillar and Purdue CPT encourage and challenge other industries and organizations to expand funding for scholarships specifically targeted to recruit women and minority students into Computer Technology as part of this forward-thinking initiative sponsored by the Caterpillar Foundation.

ASSESSMENT

To evaluate the effectiveness of the program, the following information will be tabulated over a period of two to five years:

- 1) The number of students reached at presentations
- 2) The number of requests for information packets sent to female and minority students
- 3) The number of female and minority students enrolling in CPT
- 4) The number of female and minority students enrolling in IT-related majors in other institutions or Purdue schools

BUDGET

\$1,000 per year will be budgeted for developing and printing brochures and other advertisements (e.g., web pages) that describe and market the program. Caterpillar's generosity in creating the program will be prominently indicated.

\$4,000 per year will be allocated to reimburse students for their time recruiting on campus or away from campus. Current laws prohibit the University from compensating students directly with university funds. Students can be reimbursed for their time through gift funds designated for that specific purpose. The Department Head and the business office will determine the pay rate for student recruiters. Some expenses will be incurred for travel and printing costs.

\$20,000 per year will be allocated to create five, \$4,000 scholarships for the most deserving female and minority admits in each year. Caterpillar funded scholarships would be named as the "Caterpillar Scholarships for Minorities in Information Technology." Each fall, the department would host a luncheon for the scholarship winners and invite representatives of Caterpillar (plus any additional scholarships awarded by affiliated industry partners) to that luncheon and present the awards. Each spring, Caterpillar would be invited to the CPT Awards Banquet to again recognize the winners in front of a somewhat larger audience of CPT students, faculty and staff.

In summary, the projected budget for each academic year is as follows:

\$1,000	Advertising
\$4,000	Student travel reimbursements
<u>\$20,000</u>	Scholarships 5 x 4,000
\$25,000	Total annual investment

Over a five-year period, this results in \$125,000 total investment in this important project.

We appreciate your consideration of this proposal as the CPT department strives to diversify its student base to be able to provide the national work force, including Caterpillar, with an increased pool of prospective minority IT employees.

REFERENCES

- AAUW. (2000). Tech-savvy: Educating girls in the new computer age. Washington, DC: AAUW Educational Foundation.
- Astin, A. W. (1993). What matters in college? "Four critical years" revisited. San Francisco: Jossey-Bass.
- Astin, H. S., & Sax, L.J. (1996). Developing scientific talent in undergraduate women. In Davis, C. et al. (Eds.), The equity equation: Fostering the advancement of women in the sciences, mathematics, and engineering. (pp. 96-121). San Francisco: Jossey-Bass.

Fox, M. F. (1996). Women, academia, and careers in science and engineering. In Davis, C. et al. (Eds.), *The equity equation: Fostering the advancement of women in the sciences, mathematics, and engineering*. (pp. 96-121). San Francisco: Jossey-Bass.

Hanson, S. L. (1997). *Lost talent: Women in the sciences*. Philadelphia, PA: Temple University Press.

Mervis, J. (2000). Diversity: Easier said than done. *Science*, 289 (5478), 378-379.

Molad, C. B. (2000). *Women weaving webs: Will women rule the internet?* Houston, TX: CBM Press.

National Council for Research on Women. (2001). *Balancing the equation: Where are women and girls in science, engineering and technology?* New York: National Council for Research on Women.

National Science Foundation. (2000). *Science and engineering indicators*. (Appendix Table 3-10: A-155). Washington, DC: National Science Foundation.

Sanders, J. (1995). Girls and technology: Villain wanted. In S.V. Rosser (Ed.). *Teaching the majority: Breaking the gender barrier in science, mathematics, and engineering*. (pp. 147-159).

Seymour, E., & Hewitt, N. H. (1997). *Talking about leaving: Why undergraduates leave the sciences*. New York: Westview Press.

Vetter, B. M. (1996). Myths and realities of women's progress in the sciences, mathematics, and engineering. In Davis, C. et al. (Eds.), *The equity equation: Fostering the advancement of women in the sciences, mathematics, and engineering*. (pp. 29-56). San Francisco: Jossey-Bass.

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