

RECRUITMENT AND RETENTION OF A DIVERSE ENGINEERING STUDENT BODY

Sarah J. Smith

Purdue University North Central, Westville, Indiana; Email: ssmith@pnc.edu

1. INTRODUCTION

Recruitment and retention skills are critical to the university's ability to develop a diverse gender and multi-cultural engineering student base.

Important considerations include:

- Marketing the university to a diverse audience
- International outreach
- Acclimating international students into the campus community, and
- Encouraging future women in engineering candidates

Dedicated effort and planning to attract and retain international students and women in engineering will not only sustain but grow engineering enrollment.

2. MARKETING THE UNIVERSITY EXPERIENCE TO A DIVERSE AUDIENCE

Major universities establish and maintain marketing and public relations departments to assist in university recruitment. Although helpful, this is not a comprehensive approach to engineering student recruitment. Engineering educators must actively participate in student recruitment efforts. Professors are the leaders who best understand specific engineering disciplines and courses of study.

Traditional Marketing Principles to Assist Educator Participation:

- Feature brochure and website photographs that illustrate a diverse student body: women, multiple cultures, traditional (post high school) and mature audiences. Prospective students, whether from China, high school, or returning after 20 years in industry for degree completion should be able to *see* themselves as engineering students at the university.

- Submit press releases of engineering student events and accomplishments. Effective businesses routinely offer positive information to the public in the form of well-authored press releases. Professors must take a proactive role or the public will not be aware of academic student accomplishments. Every submission should include a few sentences to highlight engineering career opportunities.
- Profile a student of the month. This is an optimal platform in which the diversity of engineering students can be illustrated.
- Include engineering events on the campus calendar.
- Invite secondary education students interested in math and science to engineering events. Vary presentation times to encourage secondary education participation as a field trip or in student attendance in the evening.
- Establish an expertise directory. The university speakers' bureau is one venue. In engineering, however, a divisional expertise directory is warranted. An expertise directory identifies strengths of the educators and establishes networking opportunities for the community.
- Participate in a community brown bag lunch series. Volunteer to speak at Chamber events.

Community involvement and outreach involving engineering educators is truly a proactive approach to engineering recruitment efforts. As academic disciplines have become more active in direct recruitment and outreach efforts, areas of concern from university marketing/public relations departments have surfaced.

Areas of concern include:

- Use of internal (departmental) logos and external (university) logos, trademarks and licensing
- Compliance with the university's publications policies
- Coordinated effort to achieve a uniform, positive image of the university
- Compliance with the university's graphics standards manual (University of Sydney). Frequently asked questions include items such as, "*Where can one locate a clear copy of the university logo?*"

The university may also choose to employ professionals with unique expertise to support public relations and marketing:

- A web strategist for departmental and personal web pages.
- The university proofreader, who provides an invaluable service to the university community (University of Southern Mississippi). The university proofreader edits and approves all materials drafted for publication and dissemination out to the public.

Professors should encourage marketing and public relations departments to market the faculty and specific accomplishments. Educators need to assist in identifying achievements and differentiating qualities of various engineering disciplines. Marketing uses information to identify new ways of satisfying needs and creating value. Expanding efforts to include international outreach would result in positive recruitment results.

3. INTERNATIONAL OUTREACH STIMULATES DIVERSE RECRUITMENT

Although the United States government complicated processes for international students in recent years, thousands of students persist and become enrolled in our universities. Purdue University currently educates approximately 5,500 international students on its main campus alone. Due to recent restrictions adopted in Washington D.C., lobbying has become a priority for today's university president. As an example, Purdue University's President Martin Jischke advocated for a bill last November that would assist international student recruitment.

The primary issue involves F-1 visas. Al Qaida operatives entered the US with F-1 visas under the façade of studying aeronautics. The results for today's universities include mandatory reporting and additional international student data reports each semester. International students are not allowed to work off campus unless previously approved by their campus contact. International students must also affirm financial solvency. Most international students have a sponsor. Specific information regarding international student requirements is available on the Immigration and Customs Enforcement website: www.ice.gov.

Proactive international student recruitment requires more than a university website. Web marketing is a passive and incomplete marketing technique. International students have been confused with web recruiting as information is not comprehensive.

Long waiting lists and difficult application processes await international students. Waiting lists have stretched a year and a half or two years. Chicago University required international engineering students to take the Professional Engineers (PE) exam prior to acceptance at the University. Some universities have accepted fees (up to \$40,000) to waive waiting periods. This investment merely secured that a student's application would be considered. The fee did not assure acceptance as this decision remained with review committees.

Recommendations to encourage international student applicants:

- Establish a single professor as an international student's contact person. Students from diverse backgrounds have expressed the effectiveness of a single professor contact versus a large foreign degree committee.
- Recognize foreign students' theoretical knowledge. International students benefit from application instruction in the States. However, international students have repeatedly been enrolled in math, science and computer technology courses in which the known is repeated. Encourage placement testing for math, science and computer technology for international contingents.
- Consider each student on an individual basis, keeping his or her personality in mind.
- Increase the pool of qualified international students by providing academic and career exposure to pre-college and university students abroad.
- Communicate with students to evaluate whether a large, central campus or a regional campus would best fit academic and social needs. University hubs offer larger populations of international students. A large campus, however, is not always the best match for the international student. Many international students thrive when a regional campus provides more personal attention. One example: Susan Wilson, Associate

Director of Admissions at Purdue North Central shared that in the State of Indiana, it will take international students three months on learners' permits to obtain drivers' licenses. She has allowed students to driver her personal car for experience to encourage student success in obtaining licenses.

- Match international students with local host families. Many people reside near university campuses because they enjoy the cultural opportunities a university community offers. Local families are often willing to mentor/host international students. These relationships usually include invitations to dine with host families at suppertime and to stay with host families for breaks when the international students do not return home.
- Develop exchanges with universities abroad. The University of Aberdeen has established exchanges with 21 North American universities. Approximately 14% of Aberdeen's student population is international (traveling from over 115 different countries). International students are attracted by the quality of courses and teaching, research opportunities, and superb facilities (University of Aberdeen). Care and support provided for all students is also revered.

4. ACCLIMATING INTERNATIONAL STUDENTS TO THE CAMPUS COMMUNITY

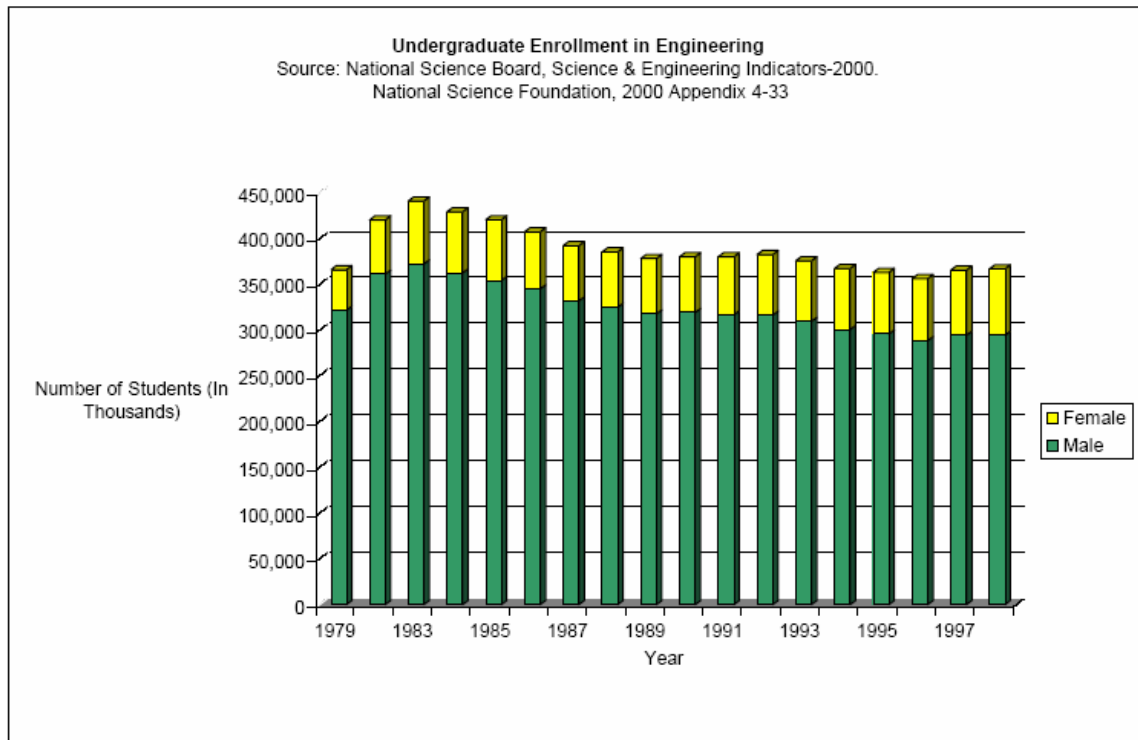
Recommendations for retention of international students include:

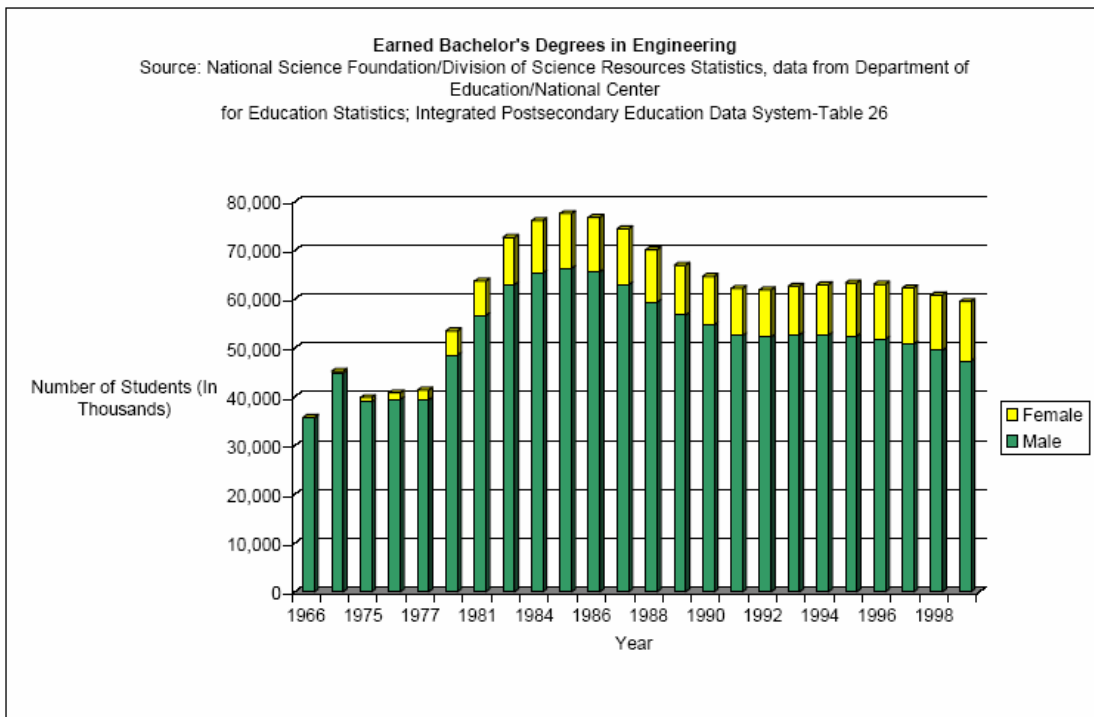
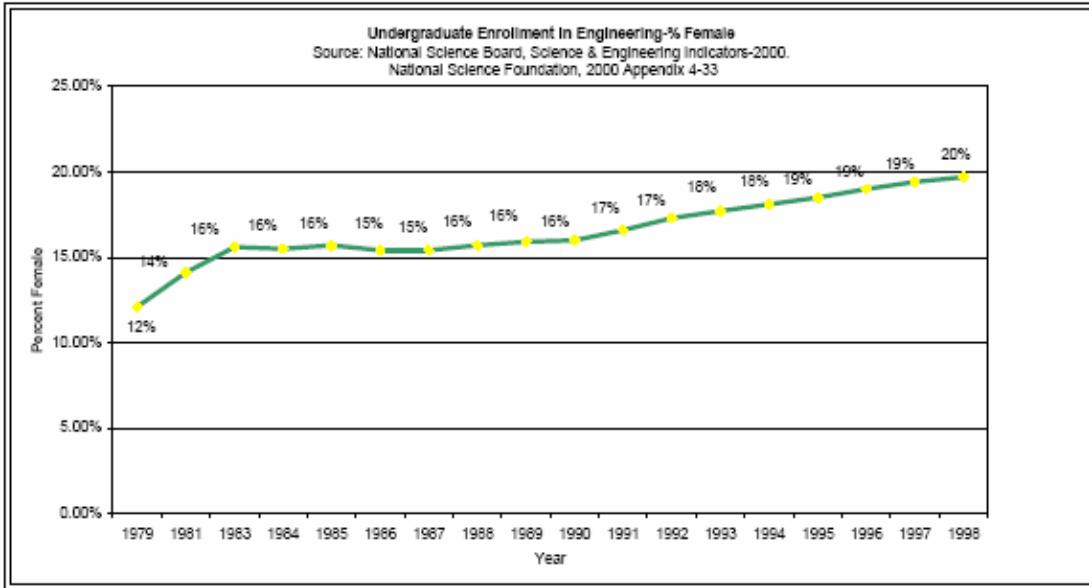
- Suggest the importance of assimilation with a religion of choice to international students. International students who have not successfully affiliated with local churches, mosques, temples etc... are more likely to return home.
- Encourage international students to ask questions in class. When international students do not participate verbally, ultimately they feel left out.
- Convey a responsibility to master the English language. This truly lies with the student, not the institution. Professors and students from international sources have reported how they needed to voluntarily attend English classes either prior to or in conjunction with university studies.
- Discuss the use of humor and slang with all students. A large component of communication is humor. When fellow students or professors quote a movie from the 1960's or use slang, international students can easily become alienated.
- Form or participate in a campus international student organization. Encourage all students to attend cultural presentations that international students develop and present on campus.
- Provide services and resources to ensure international student success. Identify local religious centers, ethnic grocery stores, transportation options, etc.
- Work with university faculty, staff and students to create an invigorating and supportive environment for all. Partner newer international students with domestic students for initial group work. Both students will learn in the process.
- Ask international students to clarify the meaning of classroom interaction. As a professor, if you did not understand a student's expression or input, ask for clarification.
- Dedicate core scholastic requirements to written and oral presentation form. This allows the professor to assess the international student's written and spoken English as well as assure transfer of training.

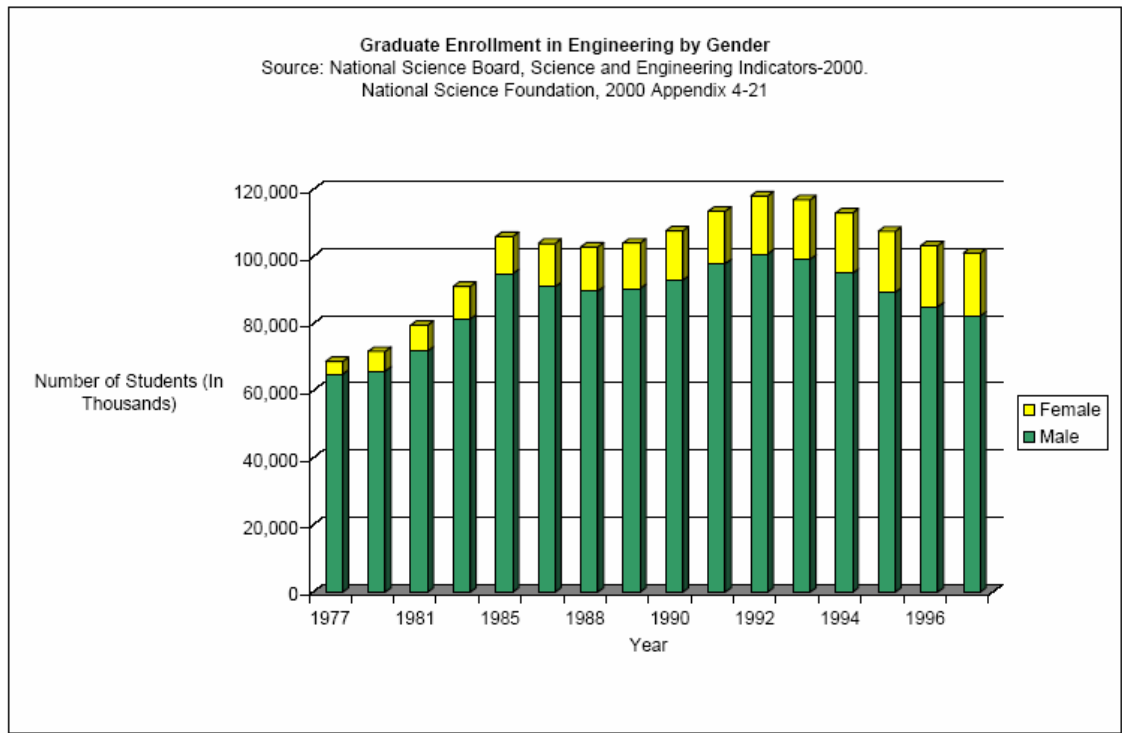
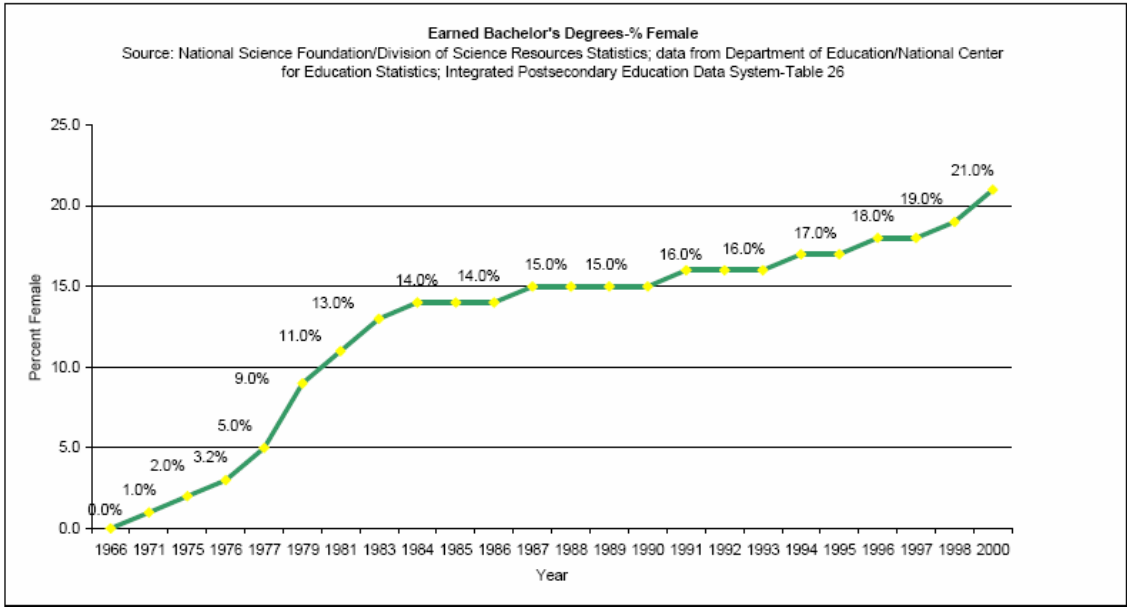
5. ENCOURAGING WOMEN IN ENGINEERING CANDIDATES

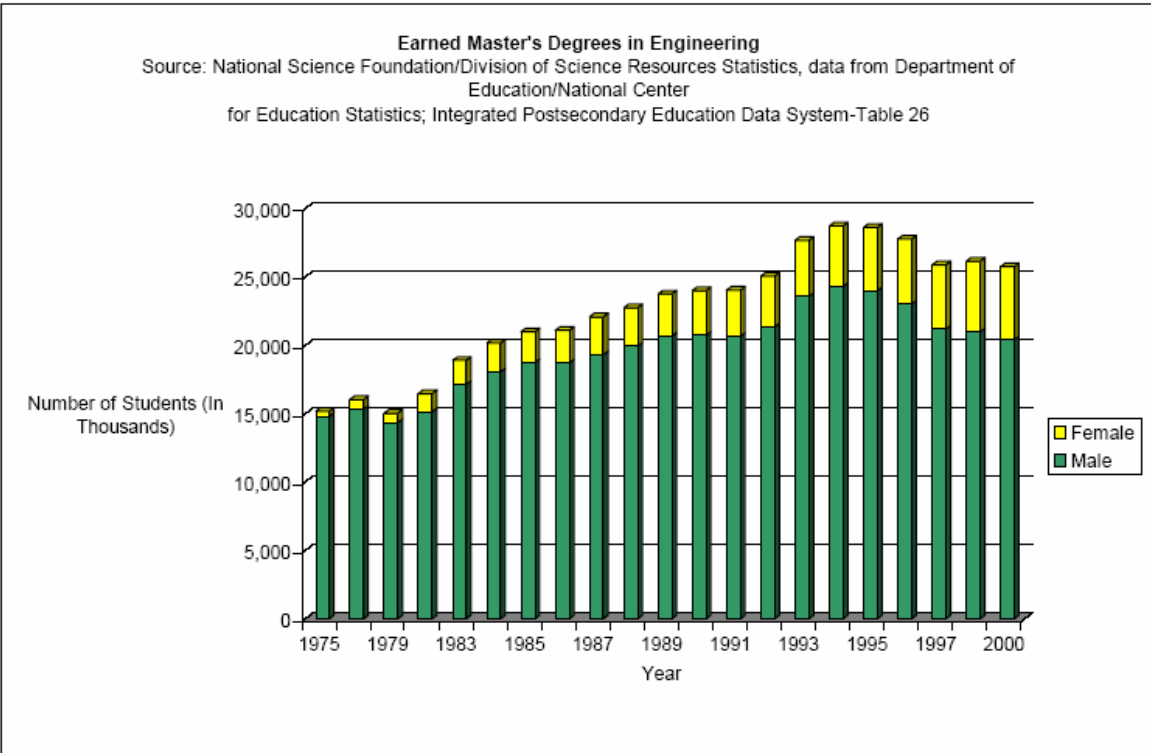
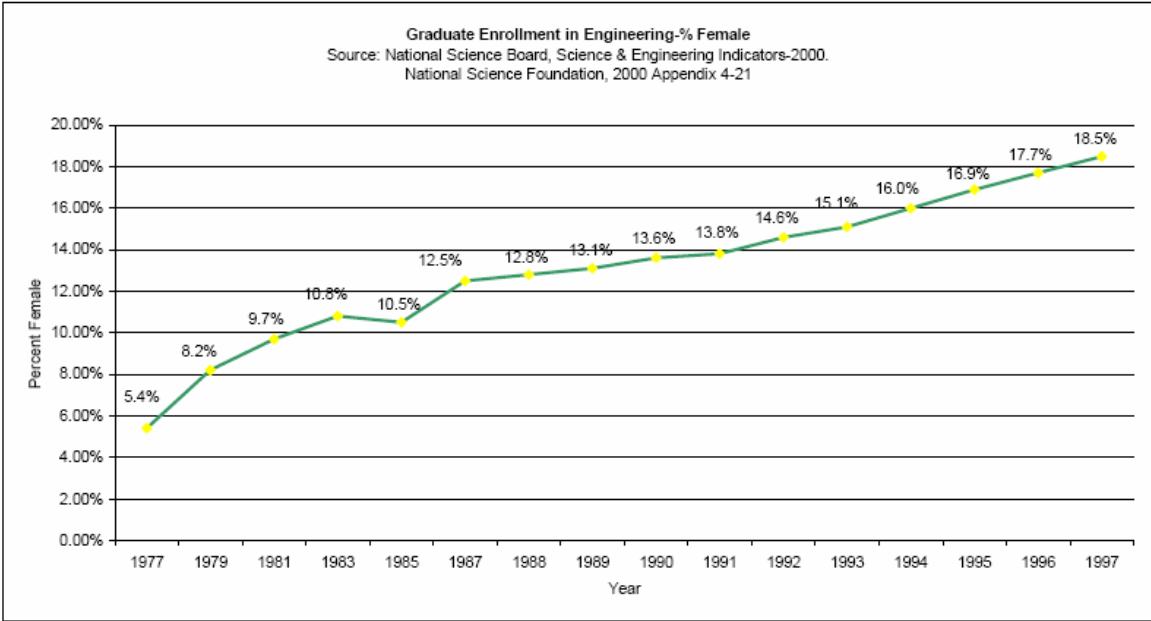
The Society of Women Engineers (www.swe.org) hosts data that illustrates steady increases in enrollment and graduation of women in engineering. The growth of women in engineering candidates has led to a gender ratio of 5:1, five male students to one female engineering student. One issue is apparent: if women in engineering had not increased in numbers over the past 25-30 years, engineering as a discipline would have experienced more significant lulls in enrollment.

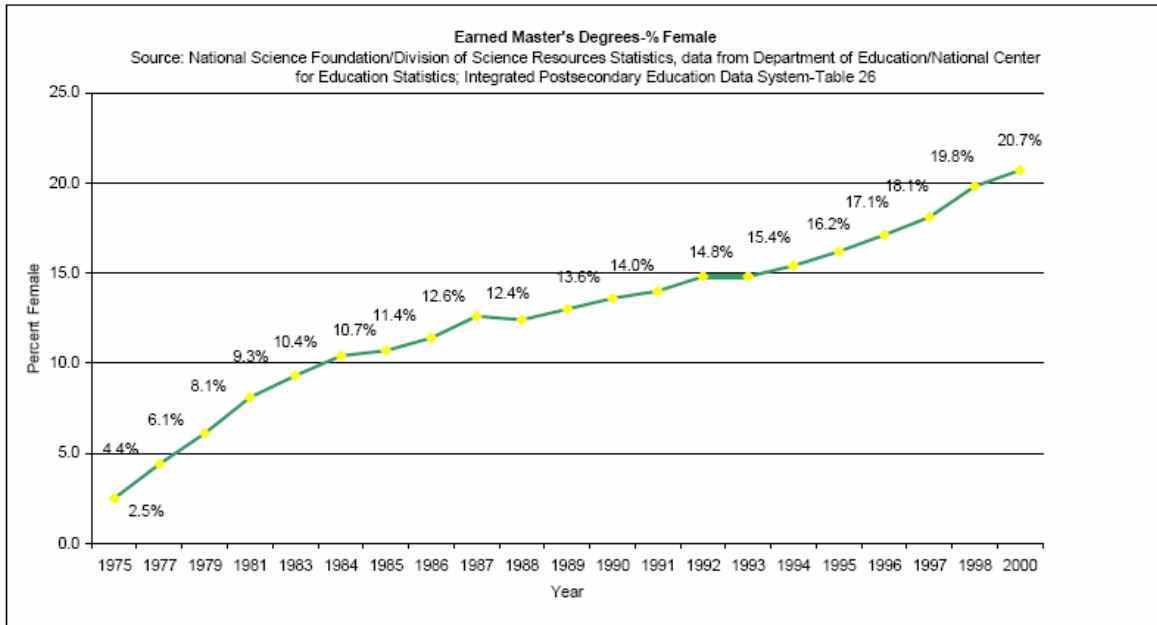
A contemporary program, “Introduce a Girl to Engineering Day” (*Professional Safety*, January 2005), holds promise as it successfully encourages women to discover engineering careers. This event, scheduled for February 24, 2005, was held as a part of Engineers’ Week. “Introduce a Girl to Engineering Day” was designed to increase interest in engineering among girls and young women. Created in 2001, each year more than one million girls are directly reached by the program. Thousands of women engineers and their male colleagues demonstrate that engineering is not only a viable career option, but a desirable one as well. In 2004, “Introduce a Girl to Engineering Day” became an international event. Outreach extended to Canada, Columbia, Egypt, India, Nigeria and the United Arab Emirates. Additional information is available at this web address: www.eweek.org











6. CONCLUSION

Recruitment and retention are important issues to universities and engineering programs. Educators are called to take a proactive role: participate in the community, mentor, and take an active interest in students' publications and research efforts. Student diversity requires educators and universities to welcome international students and women in engineering. The successful engineering graduates of tomorrow will emulate educators' attentiveness, guidance, and diversified leadership now, more, than ever before.

REFERENCES

- Engineering Education, "Introduce a Girl to Engineering Day", *Professional Safety*, January 2005, pg. 16
- Society of Women Engineers, Education Statistics About Women in Engineering in the USA, http://www.swe.org/stellent/idcplg?IdcService=SS_GET_PAGE&nodeId=98&ssSourceNodeId=13
- The University of Aberdeen, <http://www.abdn.ac.uk/sras/international/welcome2.shtml>
- The University of Southern Mississippi, Department of Marketing and Public Relations, <http://www.usm.edu/pr/functions.html>
- The University of Sydney, Faculty of Economics and Business, Department of Marketing, <http://www.econ.usyd.edu.au/market/>