

A Novel Approach to Active Recruiting of Women For STEM Faculty Positions

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Abstract— The Kansas State University (K-State) College of Engineering has created a program as part of the K-State ADVANCE Institutional Transformation Project to more effectively recruit talented faculty members. *Recruiting to Expand Applicant Pools* (REAP) is an initiative that provides competitive awards for search committees and departments to develop novel, proactive recruiting strategies that focus on gender and other diversity issues. Departments might request funding to send the department head or faculty members on recruiting trips to institutions that produce significant numbers of women Ph.D.s in their disciplines or to professional meetings at which there are significant numbers of women engineers in attendance. The K-State Department of Chemical Engineering made use of funds provided by a REAP award to carry out an aggressive faculty recruiting campaign in the 2004-2005 academic year. The outcome of the search process was a much larger applicant pool than for previous searches, and the pool included a number of highly qualified women. Two of these women applicants were hired into tenure-track positions. Similarly, the Electrical and Computer Engineering Department also received funding in 2004-2005 to engage in proactive recruiting for tenure-track positions. The outcome of this search was that positions were offered to two women applicants, with one accepting. This paper will share insights and lessons learned from the efforts to implement these innovative recruiting strategies.

Introduction

Kansas State University (K-State) is in the third year of a five-year NSF ADVANCE Institutional Transformation award. One of the ADVANCE initiatives sponsored by the College of Engineering is *Recruiting to Expand Applicant Pools* (REAP). The goal of this program is to increase the number of women on the faculty in the college. When the K-State ADVANCE program began in Fall 2003, there were only nine women in tenure-line positions and two in non-tenure-line positions in the college, which was 8.4% and 9.4%, respectively, of the number of tenure-line and total faculty in the college. The most recent available national data show that women constituted 8.4% of engineering faculties in 2001 (Women in Engineering Programs & Advocates Network [WEPAN], 2006). This figure includes instructors and other non-tenure line positions. Of the nine women faculty members in tenure-line engineering positions at K-State in 2003, five were at the associate professor rank (14.3% of all at this rank in engineering at K-State), and four were assistant professors (16.7% of all at this rank in engineering at K-State). There were no female full professors, department heads or college-level administrators. The first regularly appointed woman department head in the College of Engineering was named in 2004. The corresponding national numbers show that in 2001, 2.8% of full professors, 9.4% of associate professors and 14.9% of assistant professors in engineering were women (WEPAN, 2006).

Though K-State's percentages of women engineering faculty members are at or above the national average, except for full professors, the number of women faculty at various ranks is still very low, and the College of Engineering leadership team is committed to increasing the number of women on the faculty and in administrative positions. One of the important roles that leaders play in ensuring equitable treatment of men and women, and thus promoting the advancement of women, is to establish a highly visible commitment to fairness (Valian, 1998). The K-State College of Engineering leadership team has decided to focus on ensuring that there is appropriate representation of women in applicant pools, which the REAP program addresses by encouraging and supporting the development of proactive approaches to recruiting.

As the number of women in the applicant pool increases, data suggest that women will be more fairly evaluated (Valian, 1998). Thus, by ensuring appropriate representation of women in the applicant pool, not only is there a higher probability that women applicants might be selected for interviews due to their increased numbers, but also that their credentials will be more fairly evaluated, again leading to a higher probability of selection for interview. Researchers have noted the often voiced concern that there are not enough 'qualified women' in the applicant pool, but one of the contributing factors to this perception is that women scientists often find it more difficult to achieve visibility and prominence (Sonnert & Holton, 1996). Another factor is that women are often more reluctant to apply for faculty positions at research institutions (Sears, 2003).

One way for departments to determine what an appropriate representation in an applicant pool should be is to examine the availability of women receiving their doctorates in specific engineering disciplines. In 2005, the overall national percentage of doctorates in engineering awarded to women was 18.2%. In specific fields the national percentages varied from 12.4% in mechanical engineering to 22.8% in chemical engineering (Engineering Workforce Commission, 2005). For the two departments that have participated to date in the REAP program, the national percentages of women receiving doctoral degrees were 22.8% in chemical engineering, 16.4% in computer engineering, and 12.8% in electrical engineering (Engineering Workforce Commission, 2005). Departments at K-State are being encouraged to strive to attain a percentage of women applicants in search pools that reflects the percentage of women receiving doctorates nationally in the relevant field.

The K-State REAP program has incorporated ideas generated locally as well as suggestions made by others to facilitate identification and recruitment of women applicants (Sonnert & Holton, 1996; Trower, 2002; NSF ADVANCE at the University of Michigan, 2004; UW ADVANCE, 2004). The following describes the program developed at K-State and the outcomes from the first two REAP proposals funded.

REAP Application Process

The REAP initiative provides partial funding for search committees, department heads, and individual faculty members to develop recruiting efforts that intentionally focus on gender and ethnicity issues. This may involve travel to selected sites (professional meetings, universities, industries, etc.) to meet and actively recruit potential candidates for faculty positions in accordance with affirmative action guidelines.

A call for proposals is distributed to all engineering department heads and faculty each fall, and any proposed recruitment activities must occur during that academic year. Application guidelines are posted on the K-State ADVANCE website at http://www.k-state.edu/advance/Initiatives/college_engineering_reap.htm

Applications consist of:

1. A brief statement of how the proposed recruitment activities will enhance the diversity of the applicant pool, with respect to gender and race/ethnicity.
2. Total request with breakdown of travel, lodging, registration fees, and per diem.

Applications are submitted to the Dean of Engineering and are reviewed by the leadership of the College of Engineering. Awards are made on the basis of the likelihood of the success and novelty of the approach. To be successful, the effort usually involves pre-visit contacts, face-to-face discussions with graduate students and potential applicants, putting position announcements in appropriate publications, and soliciting applications directly. Applicants receive notification regarding funding within a month of submission of proposals. If uncommitted funds remain after the fall semester, a second call for proposals may be issued during the spring semester.

REAP Events and Outcomes in 2004-2005

Two departments have submitted proposals and been awarded funding to date to participate in this program. The Department of Chemical Engineering made use of approximately \$4,000 provided by REAP awards to carry out an aggressive faculty recruiting campaign in the 2004-2005 academic year. The recruiting process included multiple advertisements in publications and on websites, and position announcements were directly distributed to participants at an NSF-sponsored workshop for women engineers interested in faculty positions. The department head, a full professor who was the only woman faculty member in the department, and one male senior faculty member visited six universities and met with potential candidates, both male and female, at a professional meeting.

The university visits included a presentation about Kansas State University, the college, the department, and the community. It highlighted the excellence of the students in the department, research expertise of the faculty, interdisciplinary collaborative research projects, resources to support teaching, and internal funding opportunities available at the university. The presentation also featured information about university policies on family and medical leave, dual-career assistance, tenure-clock extension, the ADVANCE program, and other human resource issues. Additionally, information was provided on plans for faculty hiring (rank and numbers) in the Department of Chemical Engineering over the next three years and on open positions in other science and engineering departments at Kansas State University.

At the annual American Institute of Chemical Engineers (AIChE) meeting, the department head held individual consultations with 21 applicants or potential candidates. Approximately half of these individuals were women. These consultations were arranged by invitation from the department head to potential candidates a week or two prior to the AIChE meeting. Furthermore, information about the open position and invitations to apply were sent to approximately 40 prospective candidates who were attending the AIChE meeting. More than 80% of these prospective candidates ultimately applied.

These recruiting activities had the effect of producing an applicant pool that was nearly five times as large as the most recent previous search conducted by the department and contained more than twice as many women applicants. The last search at the assistant professor level in this department was conducted in 1999-2000. That search process consisted of one advertisement placed in a chemical engineering publication and ads placed on two websites. There were 47 applicants, of which six were women. No hire was made as a result of this search. In the search during 2004-2005, there were approximately 220 applications that included at least 14 women. The sex of the applicants could not always be determined from the name, thus the number of women may be underestimated. Applications were received from women at all six of the universities to which personal visits were made. Furthermore, this process produced a very strong applicant pool, with a large number of the male and female applicants being highly qualified. Ultimately, four of the eight candidates interviewed were women.

The outcome of the search process was that two women were hired into tenure-track assistant professor positions in the department. One of these is completing her post-doc and will join the faculty in the 2006-2007 academic year; the other started in Fall 2005.

Similarly, the Electrical and Computer Engineering Department received approximately \$2,000 in 2005 to enhance their recruiting activities. At that time, there were only two women associate professors in tenure-line positions in the department, one of whom was on partial leave. In addition to the normal channels the department had used in the past to advertise positions, the department head and faculty members made personal contacts with women in the discipline, the department advertised the position on the WEPAN listserv and sent emails to contacts at minority-serving institutions, and department representatives made personal visits to three universities with a large number of graduate students and post-doctoral fellows in the areas of specialization associated with open positions in the department. The department head or a faculty member first contacted one or more individuals at the university selected for a visit. Generally, this was a department head or director of the graduate program in the discipline. These individuals were asked to advertise the upcoming visit by representatives from K-State to appropriate graduate students. The visits included informational meetings with groups of students who might have an interest in the positions and subsequent individual interviews. Students provided resumes, which were then shared with the search committee. The department head followed up by email with thank you notes to the students for their interest in K-State.

The results from the three visits were mixed, but overall the response to these efforts was positive in terms of the number of women who eventually applied. In the 2005 search, the number of women applicants was more than five times higher than the corresponding number in each of the last three faculty searches in the department. In the previous three searches, which were conducted between Spring 2000 and Fall 2001, there were either no or only two women applicants in each search, and no women applicants were interviewed. In the 2005 search, there were eleven women applicants, representing a little more than 10% of the total applicant pool, and two of the nine applicants interviewed were women. The outcome of this process was that offers were made to both of the women applicants, with one accepting a position as a tenure-track associate professor.

Discussion

The typical academic search and hiring process has often involved establishing a search committee, creating a job description, placing an advertisement in a national technical journal or magazine, perhaps sending letters to the heads of targeted departments, and maybe making a few telephone calls or sending emails to colleagues. The committee would wait until a collection of applications arrived, usually after a predetermined deadline, and then begin reviewing applications and selecting candidates to interview. However, the number of women scientists and engineers applying for open faculty positions is not proportional to the number completing those doctorates, and the observation has been made that “waiting for more female candidates to apply ...is an ineffective strategy” (Stewart et al., 2004, p. 362).

The rather passive traditional “search” process is in contrast to the practices used in industry to hire new colleagues. Successful industry recruiters visit potential hires, partially to pre-screen candidates but also to encourage their application. The recruiters take advantage of local contacts and other connections to develop a rapport with potential hires so that they are more likely to apply. At every stage of the process the potential new hire is encouraged to continue pursuit of the position and great efforts are made to make the process easy for the candidate. The two dominant characteristics of the industry search process are: 1) the hiring entity is actively engaged with potential candidates prior to application and throughout the process until the offer is accepted, and 2) the goal is that every potential candidate will truly want the job and will feel good about the hiring entity because each candidate has had a positive experience along the way. By taking this “active” approach the company can choose the most suitable candidate for the position.

It was the intention of the College of Engineering at Kansas State University to adapt some aspects of the industrial “active” recruiting process to the academic environment. Many of these practices are also consistent with best practices that have been summarized by other ADVANCE project websites. For example, the Faculty Recruitment Handbook created by the NSF ADVANCE program at the University of Michigan discusses activities to broaden the pool, including personal contacts with women and underrepresented minorities, contacting colleagues at other institutions for recommendations, and making use of listservs aimed at underrepresented candidates (NSF ADVANCE at the University of Michigan, 2004). The REAP program initiatives sought out candidates, typically at their graduate institutions, and began developing positive relationships with them. K-State’s experience with this approach indicates that, at least in some cases, individuals are much more likely to apply to an institution if they are encouraged to do so by leading representatives of that institution. Indeed, the searches in both the Department of Chemical Engineering and the Department of Electrical and Computer Engineering saw a large increase in the total number of applicants as well as in the number of women applying. Several of the applicants indicated that they applied for the position primarily because they had been contacted by the department head who reviewed the opportunity with them, told them that there may be a good fit, and encouraged them to apply. Directly asking people to apply may be the single most important factor in the quality and quantity of the ultimate applicant pool.

Challenges

It is very important that the “active” search process facilitated by the REAP program be followed up with a campus interview that is encouraging and uplifting. Too often academics tend to go into “Ph.D. final exam” mode when interviewing a potential hire (Lawrence, 2006). Certainly the faculty and search committee can critically evaluate the candidate throughout the visit, but the candidate should have a positive, welcoming experience while on campus. Creating this welcoming climate may be a challenge depending on the institution’s cultural history and personality.

However, by incorporating some basic elements into the on-campus interview, institutions can enhance the success of the visit. These steps include:

1. Structuring the visit to ensure that women candidates have the opportunity to meet and interact with women faculty members or administrators currently in the department, college or related disciplines.
2. Freely sharing information with all candidates about resources and university policies to assist with family/worklife balance, dual careers, and family and medical leave.
3. Describing mentoring programs and other university resources that are available to assist them with establishing their research activities and enhancing their teaching and learning efforts.
4. Outlining how the department, college and university can help them be successful in their new position.

Similar recommendations have been made by other ADVANCE institutions (NSF ADVANCE at the University of Michigan, 2004; UW ADVANCE, 2004).

The K-State ADVANCE program has created a variety of support programs for women science and engineering faculty members at all ranks, so that faculty members thrive once they are hired. These ADVANCE mentoring, retention, and advancement programs and a previously existing mentoring program for women and minority faculty members in the sciences and engineering have been described elsewhere (Montelone et al., 2003; Montelone & Dyer, 2004; 2005). Sharing these initiatives with applicants and interview candidates is one way to convey the commitment the institution has made to creating a welcoming and inclusive climate.

Dual career issues are an increasingly important aspect related to the hiring of both men and women faculty members and administrators. National data for scientists and engineers at the doctoral level in the labor force show that although women are less likely than men to be married, those women who are married are much more likely than married men to be part of a dual career couple in which the partner is another scientist, engineer, or highly educated professional (Xie & Shauman, 2003). Recognition of this trend for both male and female candidates is essential for both department leaders and deans. This issue is particularly challenging at K-State because of the limited number of employers in the community, but the deans of the various K-State colleges are working collaboratively to identify employment opportunities for partners of prospective faculty members.

Four of the eight candidates interviewed by the Department of Chemical Engineering had a partner with a Ph.D. in science or engineering. Two of the four were women and two were men. Dual career issues for the other four candidates were not raised by those candidates, though they may have existed. Likewise, one of the men and both of the women interviewed by the

Department of Electrical and Computer Engineering requested information about dual career accommodations. Both of the women who were offered positions had a partner with professional credentials. The only additional action taken as a part of these search processes was to compile data for openings in other departments and share this openly as a link through the position advertisement. The authors are not aware of any particular accommodations that were made by the university for spouses of individuals to whom offers were made through the REAP initiative. However, the active recruiting associated with the REAP program could facilitate early identification of candidates who have a partner in the same or a similar discipline, which may allow a department to negotiate an additional tenure-line position so that both partners could be hired.

There is no doubt that the REAP program requires more time and effort from the department head and other faculty members involved in the search. But clearly the long-term rewards of hiring an inspired and satisfied new faculty member far outweigh the investment costs. Furthermore, a search using the REAP process is far more likely to successfully hire a new faculty member. It only takes one failed search to convince a department head that added up-front effort is a very good investment.

Lessons Learned and Recommendations

Faculty members should be made aware of the need to be continuously evaluating individuals that they meet for their potential to become successful members of the department's faculty. These efforts will ensure that the "search" process is well underway when faculty openings become available. Recruiting can be conducted at professional meetings, through discussions with faculty from other universities, and via contact with authors of newly published research. Additionally, when visiting other academic institutions (for example, to present research results as a part of a seminar series), faculty members can request the opportunity to meet with graduate students who have expressed an interest in academic positions. Information can be provided to potential applicants about the department, its future directions, and their possible "fit" in the department. Then, when a position becomes available, the search committee will have a readily available pool of possible recruits. These individuals can be directly contacted by telephone or email to notify them of the position and to invite them to apply.

In arranging university visits it is most efficient to make contact with the department head or graduate program director in the discipline of the search and ask for assistance in identifying students to invite to presentations and for individual interviews. Departments typically are reluctant to share names of individual students, but are willing to contact them directly and encourage them to participate in the visit. It is also helpful to personally contact colleagues at universities of interest and request their assistance with the recruitment process. These actions, coupled with aggressive recruiting of candidates at appropriate national meetings and through a widespread advertising campaign, should be significant first steps to ensuring that a diverse group of highly qualified applicants exists for every open position.

Assessment

One indicator of the success of this initiative has been the increase in the size of the candidate pools and the percentage of women in the pools associated with REAP searches in 2005 relative to previous searches in these departments. Additional assessment plans include 1) interviews

with department heads and faculty members who engage in recruiting activities as part of the REAP initiative; 2) interviews with faculty members hired as a result of REAP recruiting efforts; and 3) collection of feedback from prospective faculty candidates who participate in future REAP recruiting events at national meetings or as part of university visits. In all cases, these individuals will be solicited for their opinions of the effectiveness of the activity.

Expansion and Institutionalization

While the specific efforts described in this document were supported in part by Kansas State University's NSF ADVANCE grant, the total dollars invested from this source were modest (~\$6,000 total for the two departments combined), and thus this approach is not financially prohibitive and could easily be successfully replicated in other departments and colleges. The cost is not a barrier to achieving the ultimate objective. The primary feature of this plan is developing a recognition among departmental leaders that recruitment of new faculty members is a long-term commitment that should be on-going. To the extent possible, all faculty members should be recruiting all the time, open position or not.

It is the intent of the College of Engineering leadership team to use the active recruiting approach exemplified by the REAP program for administrative searches in the college. Departments also can request funding to support recruitment of women applicants for department head positions.

A significant additional commitment to support this approach has been put in place by the Dean of Engineering. He has expanded the scope of the REAP initiative as originally outlined in the ADVANCE award, by creating a hiring incentive, currently in place, in which the college will provide 30% of the salary of any new future hire who is a woman or member of an underrepresented minority group, as long as that individual remains at K-State. The two departments that participated in the REAP program in 2005 have taken advantage of this incentive.

K-State has already seen significant results from the synergy created by the implementation of the REAP program and the hiring incentive established in the College of Engineering. As positions become open in other departments and at the college level, it is anticipated that the continuation of the programs will lead to further increases in the number of women hired into both faculty and administrative positions in the college.

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