Creating a Sustainable Model for an NSF ADVANCE Project

Dr. Jenna P. Carpenter, Louisiana Tech University

Associate Dean, Undergraduate Studies, Wayne and Juanita Spinks Professor, Director of the Office for Women in Science and Engineering, College of Engineering and Science, Louisiana Tech University
Creating a Sustainable Model for an NSF ADVANCE Project

Five years ago, Louisiana Tech University’s ADVANCE project began with a goal of building a more supportive climate, enhancing promotion and leadership, and increasing retention of women faculty in STEM. The project has eight programs: monthly faculty lunches; workshops/distinguished lectures; mini-grants for research activities; a Mentoring Program; a Worklife Policies effort; Executive Coaching; an Advocates and Allies Program for male faculty; and a Grant Writing support program. The project has adapted materials from other ADVANCE projects and utilized the latest research on professional development, gender issues and leadership, with project personnel, on-campus speakers and external experts to deliver content. Data suggests that participants appreciate the collegiality and focused content of the workshops. The opportunity to connect with other women faculty was also valued. Assessment indicates that over half the women faculty report feeling more confident about professional abilities and more assertive in advocating for career needs. Male faculty/administrators report being familiar with issues impacting the success of women, as well as strategies that can be employed to manage around these issues. Women faculty are less likely to report feeling isolated in their department on campus. This paper will review the plan to transition to sustainable status at the conclusion of the project, including a report on the first year of that transition effort.

Background

Louisiana Tech University is in a medium-sized state university with an increased emphasis on high-quality interdisciplinary research in key focal areas over the last 20 years. The College of Engineering and Science emphasizes and utilizes an interdisciplinary, team-based model in all aspects of administration, education, and research. The college incorporates engineering, engineering technology, computer science, math, chemistry, and physics in a single administrative structure, which emphasizes collaboration and removes many traditional systematic hurdles. The practical structure of the college demonstrates a more collaborative, versus competitive, work environment than most institutions. The college leadership was reasonably familiar with gender issues as they relate to undergraduate education, faculty retention and success prior to ADVANCE. The college has been successful in securing federal funding for and implementing a number of relevant programs, employing for approximately a dozen years an integrated model for the first two years of undergraduate engineering education. This has reaped significant rewards in student success, retention, and satisfaction.

Faculty expectations in the college for teaching, research, and service vary from department to department. Tenure-track/tenured faculty typically teach three to six courses per year and are generally expected to contribute to two to four proposals per year (at least some of which can be as a co-PI). One to two publications are expected per year, in general, as well as reasonable production of PhD and master’s students. Teaching and research are both considered important, given the focus on personal interaction, innovation in curricula, and hands-on learning. In fact, for most faculty, at
least some of their proposals and publications can be education-focused.

Specific Barriers to Women’s Advancement at University X

An analysis of data from the years 2000-2008 suggested several barriers to the advancement of women faculty in STEM in the college. Discrepancies in terms of salary, resources, and other measures of compensation did not appear to be issues at the University. Salary data at the assistant professor level was identical for men and women in both engineering and science; at the associate and full professor level, salary data in the sciences was statistically similar. An analysis of start-up packages showed women received larger packages (in terms of dollar value) than their male counterparts. While there has been and continues to be a negative disparity in the total number of women in STEM fields in the college, the college leadership has exerted concerted effort over this time period to address this problem. These have increased both the total number of tenure track women faculty and the number of disciplines that have at least one tenure track female faculty member. Two women held formal leadership roles in the college during this time period. For reference, the college averaged around 70 tenure-track/tenured faculty and 10 women tenure-track/tenured faculty during this time period. The total number of leadership positions in the college during this time frame averaged around 25.

A faculty survey adapted from similar ADVANCE surveys at University of Wisconsin-Madison and University of Rhode Island identified several areas for potential improvement, including overall job satisfaction related to working climate, retention, and promotion/leadership. Most positive climate characteristics rated lower for women and negative climate dimensions rated significantly higher for women. Thus, women experience a less welcoming and more demanding work environment. This situation is of particular concern as research shows these issues have the greatest apparent impact on women, who often under-represent or altogether deny experiences of discrimination.

With funding from the NSF ADVANCE Program (Award #0930232), the college has implemented a concerted systematic approach to address the issues of climate, retention/promotion and professional development, with the overall goal of implementing programs which will increase employee satisfaction of both sexes and enhance retention rates, with a focus on performance and sustainability.

Theoretical Framework

Social Cognitive Theory and the extension of this theory to career development and work satisfaction provide the underlying theory that informs the project. At the foundation of this theoretical framework is the belief that a person is both an interpreter of contextually-bound experiences and agent in changing those experiences. As such, one’s context or environment plays a central role in moderating one’s career choices and goals, and ultimately, work satisfaction. Bakken, et. al. proposed that research career development in the medical field be studied from a social cognitive perspective that considers the multiple environments central to one’s life and work. Relevant to this
project, the authors advocated that attention be given to the multiple environments of research, academia and home/family life that create numerous and often competing expectations and demands on one’s work life. These multiple environments interact with personal characteristics (e.g. gender, race) to influence career behaviors, confidence in one’s ability to do research (research self-efficacy), and the outcomes one expects from a research career (career self-efficacy). These factors, in turn, predict one’s initial or sustained interest in a research career pathway. This theoretical framework is important because it recognizes the role of personal agency and personal characteristics in the career development process. The authors suggested that interventions to increase the number and effectiveness of researchers in an academic environment be focused on 1) reducing role conflicts imposed by multiple environments, 2) providing continuity of training efforts, 3) creating a positive and rewarding mentoring culture, 4) and incorporating and evaluating efforts to increase one’s research self-efficacy beliefs.

Not only must one be interested in a career pathway and provided with the optimal conditions to pursue a career pathway, they must be supported in their work environments to achieve and maintain a satisfying work life. Lent and Brown\textsuperscript{13} initially proposed a model for work satisfaction that extends their scholarship on Social Cognitive Career Theory\textsuperscript{11}. In this process model, the authors posit that work satisfaction is influenced by 1) one’s affective traits, 2) participation in goal-directed activities, 3) environmental supports and resources, 4) work self-efficacy and 5) both expected and received works conditions and outcomes. The relationship between environmental supports and resources and work satisfaction is both direct and indirect. Indirect factors include one’s participation in and progress toward goal-directed activities as mediated by work self-efficacy and work conditions and outcomes. The advantage of this work satisfaction model is that it acknowledges both subjective and psychological forms of well-being along with social and cognitive factors that influence work satisfaction. In other words, it acknowledges one’s satisfaction toward life and negative or positive feelings in concert with one’s desire for self-actualization, meaning and purpose in life within the context of the work environment. These forms of well-being are necessary for creating salience between one’s personal goals and identities and her roles within the work environment. Goal-relevant supports and resources within the work environment, therefore, are important for promoting work-life balance and job satisfaction\textsuperscript{13,14}. Lent and Brown\textsuperscript{13} proposed that interventions be targeted to those that are likely to impact work satisfaction, such as helping an employee overcome perceived obstacles to and make progress toward achieving her goals, implementing strategies to foster self-efficacy beliefs, creating salience between work roles and work goals, and enhancing the meaning-making potential of one’s work.

Considering these various influences on work satisfaction and the intervening areas suggested by Bakken, et al,\textsuperscript{14} and Lent and Brown,\textsuperscript{13} our project is focusing on interventions that will most likely result in work satisfaction and ultimately influence the retention of women faculty in STEM fields. More specifically, our ADVANCE initiatives target mentoring, and other related programs such as the faculty lunches and career development workshops, as means of providing environmental supports and resources to promote work satisfaction and retention of women and men in the college.
A concerted development of formal mentoring programs, professional and leadership development programs and institutional policies for life transitions should yield gains in women’s satisfaction and therefore, retention and promotion.

Program Overview

As suggested by the initial faculty survey, the project has worked to adapt and implement best practices from NSF ADVANCE Programs designed to build a more supportive climate for women faculty in STEM departments, provide training on professional development and leadership, and work to increase retention of women faculty. Specific programs developed for each of these focus areas is listed in Table 1 below, followed by a short summary of each program. The programs were offered to faculty in STEM departments, with the exception of the worklife policy efforts, which have been extended to the entire campus. There is some overlap between the initiatives and goals. For example, worklife policies should contribute to retention of women faculty, in addition to helping create a more supportive climate; mentoring assists women faculty with promotion and leadership as well as improving the climate; distinguished lectures focusing on gender issues educate administrators and male faculty, which in turn helps provide a more supportive climate, etc. A description of each program follows.

<table>
<thead>
<tr>
<th>Goals</th>
<th>Initiatives for Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climate</td>
<td>Faculty Lunch Program</td>
</tr>
<tr>
<td></td>
<td>Mentoring Program</td>
</tr>
<tr>
<td></td>
<td>Advocates and Allies Program</td>
</tr>
<tr>
<td></td>
<td>Worklife Policies Effort</td>
</tr>
<tr>
<td>Retention</td>
<td>Grant Writing Program</td>
</tr>
<tr>
<td></td>
<td>Career Networking Awards</td>
</tr>
<tr>
<td>Promotion and</td>
<td>Executive Coaching Program</td>
</tr>
<tr>
<td>Leadership</td>
<td>Distinguished Lectures/Career Development Workshops</td>
</tr>
</tbody>
</table>

Table 1 – ADVANCE Programs

The monthly Faculty Lunch Program provides opportunities for women faculty to network and socialize with other women faculty, as well as incorporates short, focused professional development training. The lunches are held at the campus faculty club, a popular location with quality food and multiple menu options. It is
also centrally located on campus, which makes it convenient for all participants. Efforts are made to schedule the lunches to minimize conflicts with faculty teaching schedules. To decrease impact on faculty time, lunches are kept to one-hour. The first part of the hour is unscheduled, to provide participants with an opportunity to get their food, get settled, and socialize/network with other attendees. The remainder of the session is used to give a presentation on a professional development topic (leadership, communication, time management, lab management, worklife balance, negotiation, networking, administrative pathways on campus, using teams or peer-editing in class) or a climate-related gender issue (stereotype threat, student-incivility, implicit bias, impact, respect, effectiveness). Participants are encouraged to contribute, share, and reflect during the sessions. All presentations are posted on the program website.

The faculty Mentoring Program has as its goals to 1) provide support for faculty related to career activities; 2) communicate institutional expectations in research, teaching and service; and 3) assist faculty in becoming better socialized in the broader college and university culture. Modeled after a similar program at the University of Rhode Island, it has a strong research basis\textsuperscript{15}. Training for mentors and mentees is provided through one-hour workshops prior to joining the program, dissemination of training materials, and a monthly e-newsletter. Training materials (also posted on the program website) include brochures, self-assessments, and best practices. The goal of the monthly e-newsletters is to provide additional support and information for mentees, as well as remind mentee/mentor pairs to meet. The program operates on a yearly schedule, with formal program evaluation at the end of the year. Early in the project, each participant was given an opportunity to continue in the program with their current mentor, continue in the program with a different mentor, or drop out of the program. By combining the formal program evaluation with an opportunity to augment or reassign the pairings, the goal was to make it easy to reassign pairs that are not functioning well without embarrassment to either party. Based on formative project assessment, mentees are now encouraged to switch mentors each year to increase the likelihood that they continue to receive valuable information and advice, benefit different perspectives, and are persistent in meeting on a regular basis with their mentor. The program provides each mentee with only one mentor outside their department, but strongly encourages mentees to solicit other mentors both inside and outside the institution, as appropriate. In an effort to both garner widespread support for the junior faculty mentoring program and increase the likelihood that the program becomes firmly institutionalized; it was decided to open the formal mentoring program to all tenure-track faculty. Namely, research suggests that male faculty may be jealous if female colleagues receive special support to which they do not have access, that women faculty may be hesitant to take advantage of a “woman-only” program as it suggests that they have to have special help to be successful\textsuperscript{16}. Formative assessment and feedback from the project External Advisory Board have informed other changes to the program over time, including regularly scheduled opportunities for mentors and mentees to meet in an informal setting, use of more mid-level research active faculty as mentors (versus senior faculty with more administrative responsibility and less research activity).
Given the progress made over the first three years of the project by male faculty and administrators in acknowledging and understanding the climate-related issues on the campus of Louisiana Tech University, an Advocates and Allies Program for male faculty was begun in year four of the project. The program kicked off with a three training sessions by male faculty from North Dakota State’s FORWARD Advocates and Allies Program, developed by their NSF ADVANCE FORWARD Program\textsuperscript{17}. Thirty-three volunteers attended a one-hour session that reviewed the benefits of diversity for everyone, the need for male diversity partners, the risks and rewards of participating, and how male faculty can lead in this effort. Each quarter, these attendees are invited to participate in a one-hour training seminar lead by two of their peers to assist in their ongoing education and understanding about climate-issues, impact, and strategies they can use to advocate for women faculty in STEM.

The ADVANCE Program leadership laid the groundwork for developing one or more new Worklife Policies for the campus during years one and two, in partnerships with other colleges on the university campus. A campus-wide survey suggested significant interest in expanding the services of the nationally accredited early childhood education center on campus. The center began offering their program for three- and four-year olds with a modified full-day option (children may attend both the morning and afternoon sessions but must be picked up for lunch) for the first time in year four of the project. Project personnel were asked to serve on the Faculty and Staff Senate Benefits Committee during year three of the project to draft a resolution recommending that the university adopt worklife policies that peer institutions have adopted. The resolution was passed by both the Benefits Committee and the full Faculty and Staff Senate in spring of 2012. Currently, a campus-wide committee, led by the project co-PI, with representatives from each of the colleges are working to draft policies in four areas: modified duties policy for faculty dealing with life transitions, tenure-clock extension policy for faculty who have/adopt children, a tuition exchange program, and a common policy on tenure and promotion.

The Grant Writing Program has at its goal to increase the success of women faculty in securing federal funding. It has sponsored a variety of activities, from a statewide NSF Day, to webinars on NSF programs, to an NSF Career Writing Group during year four which met weekly in the spring to learn about writing successful NSF Career proposals. In addition, a staff person has been trained to assist with submission of federal proposals, since neither the College nor university provides such assistance. An early effort to provide funds for external pre-review of proposals was discontinued for lack of interest.

One of the most successful programs has been the Career Networking Awards. Designed to provide female faculty with funds ($2000 - $3000) to support activities aimed at increasing research success, the program has been able to fund 100\% of requests. Faculty have traveled to work with leading experts in their field, utilize specialized laboratory equipment not available on our campus, and attend workshops to learn new lab techniques or meet leaders in their field. In addition, the program has been able to co-fund several more extensive activities, such as collaborations on longer term research projects and two highly successful, visible lecture series featuring experts from across the country. The
latter has been so popular with faculty, graduate students, research centers, and administrators that there is strong interest in having it continue even after the conclusion of the project, utilizing other funding sources.

In an effort to provide mentoring, as well as leadership training, for mid-career women faculty, the program has offered a year-long Executive Coaching opportunity for women who are tenured. Although the program has only had funds to support up to 3 women each year, every eligible female faculty member has been able to participate in the program. Participants meet three times over one year with an academic executive coach via teleconference, with homework between sessions. It has been very popular with female faculty who are too far along in their career to benefit from a traditional mentoring program.

Approximately two external a Distinguished Lectures featuring well-known external speakers visit campus each year to offer Career Development Workshops. The goals of this initiative are to increase awareness of climate issues for women in STEM and to disseminate information about research-based best practices for addressing these issues to women faculty, male faculty, and administrators. Focused marketing has resulted in strong attendance at the workshops, as well as a positive reception of the messages and information they deliver and, ultimately, changes in attitude and behavior. Careful emphasis is given to bringing outstanding, prestigious speakers in an effort to further elevate both the status of the overall program and the status of receiving an invitation to participate in one of the workshops. By utilizing nationally-recognized external researchers and lecturers with expertise in climate and gender issues, the program has sought to establish legitimacy of climate issues, solicit buy-in about the negative impact of such issues on the larger college and campus communities, and educate faculty about the issues and potential solutions. Initially these were two separate programs, but they were merged during year two, based on formative assessment. Some events have been designed for small groups (two dozen participants), some have been invitation-only, while others have been open to the entire campus. Most lecturers have given multiple talks on a common theme tailored to different audiences. Some events focused specifically on providing the same type of professional development training (topics such as leadership, negotiation, climate issues, mentoring, and diversity) as in the faculty lunches, but in more depth and with more opportunity for engagement and reflection. Others have been designed for administrators and other key (male) leaders in the college in an effort to educate them about gender and climate issues in a non-threatening environment. Topic selection is influenced by popular sessions from the monthly luncheons, faculty requests, issues of interest that surface from evaluation of other programs, as well as serendipitous opportunities.

Assessment Summary

A mixture of quantitative and qualitative measures was used to collect baseline data during the first year. They focused on evaluation planning efforts during the first year of the grant; findings from a survey and interviews administered to college faculty and administrators; and institutional data related to the goals of the project. During years two
through four, a follow-up survey was administered to all college faculty (completion rates for female faculty have been around 80% each year; completion rates for male faculty have been around 50% each year), in addition to faculty interviews (completion rates for female faculty and administrators have been around 90%, completion rates for mentors of female faculty have varied from 50% - 100%) and collection of institutional data (faculty gender composition by rank, promotion, attrition, time in rank, grant applications and awards, publications, leadership positions, recruitment, awards and worklife policies over time) related to the goals of the program. Note that project personnel who are faculty, administrators and/or mentors do not participate in the interviews.

It should be noted that the college has under 100 faculty members, approximately 70 of whom are tenure-track/tenured faculty. Over the time span of this project, the number of women faculty has ranged from 15 – 17, with 5 – 7 non-tenure-track, 2 – 4 at the assistant professor level, and 4 - 6 at the associate professor level, and 1 – 2 at the full professor level. The size of the college and small number of female faculty members (approximately 10 tenure-track/tenured) imposes several restrictions on data collection and reporting. First, identifiable information (aside from gender) is not included so as to protect the identity of the faculty member. Secondly, surveys are administered anonymously, so it is not possible to compare individual respondent’s responses over time. Lastly, similarities or differences in survey results across different years must be interpreted carefully because the set of respondents may not be exactly the same from year to year. It should also be noted that the percentage of male faculty responding to the annual faculty survey is somewhat lower than the percentage of female respondents, which may affect the validity of the responses. The fact that the project is focused on improving the success of women faculty may be a contributing factor to the lower response rate from male faculty. For a survey is administered via email, however, the response rate for male faculty is considered good.

Here, we summarize data from years one through four relative to the overarching goals of climate, retention, and professional development/leadership, as well as the eight programs, described above. Additional data, not reported here, examines a number of other issues related to these topics.

The percentage of female faculty who rated the climate in their primary program (department) as positive or very positive has climbed each year of the project (Chart 1). The percentage for male faculty initially rose, then fell back to the 2010-level. A few faculty members who noted improvements in the climate attributed the gains to the ADVANCE program. Male and female faculty who felt that the climate had worsened attributed it to the continued budgetary woes at the university. Women were, however, still less likely in than men to report that their program had taken steps to enhance the climate for women (29% for female faculty, 47% for male faculty in 2013 compared to 17% and 26%, respectively, in 2010). Note that “departments” on our campus are called “programs”.
It is also interesting to note that no faculty, male or female, have rated the climate in their program as very negative, any year. The percentages of female and male faculty who have rated the climate as negative each of the four years is given below, in Table 2. The responses, not surprisingly, mirror the trends in the ratings of very positive + positive in Chart 1. The largest negative rating by female faculty was in year 2 of the project, followed by year 3. One possible explanation could be that women faculty were initially unaware of gender issues and their impact on the workplace. By the end of the second year of the project, women faculty were more accurately able to identify a number of these issues as existing within their programs and impacting their own careers. As training on strategies for addressing these issues and improving the climate progressed over the lifetime of the project, i) women faculty were better educated about effective strategies for dealing with the issues, and ii) as male faculty became more aware of the climate issues and their impact, they began to employ strategies to ameliorate their effects. By the end of year 4, the percentage of female faculty who rated the climate as very positive + positive was at a high and 0% of female faculty rated the climate as either negative or very negative, for the first time since the project began.

<table>
<thead>
<tr>
<th>Year</th>
<th>Gender</th>
<th>Negative</th>
<th>Very Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>Female Faculty</td>
<td>8%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Male Faculty</td>
<td>7%</td>
<td>0%</td>
</tr>
<tr>
<td>2011</td>
<td>Female Faculty</td>
<td>31%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Male Faculty</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>2012</td>
<td>Female Faculty</td>
<td>15%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Male Faculty</td>
<td>3%</td>
<td>0%</td>
</tr>
</tbody>
</table>
Table 2 – Percentage of Faculty who Rated the Climate in their Primary Program as Negative or Very Negative

More than 50% of the tenured and tenure-track female faculty in 2013 reported feeling more confident professionally as a result of the ADVANCE program and provided examples of how they were being more assertive about advocating for their career needs. Multiple female faculty said they has become better about promoting themselves. Another faculty member indicated that they program has normalized her own expectations.

The percentage of female faculty who feel isolated either in the program (department) or on campus fell to 0% in 2013, versus 8% for male faculty (Charts 2 and 3). The percentage of female faculty who felt that they “fit” in their program increased from 77% in 2012 to 86% in 2013. They were also more satisfied with the amount of social interaction with members of their program (23% in 2012 to 64% in 2013). Fewer female faculty, however, were significantly less likely than male faculty to report that their colleagues solicit their opinion (p < 0.01) and significantly more likely to report that they encountered unwritten rules concerning how one is expected to interact with colleagues (p < 0.01).

<table>
<thead>
<tr>
<th>Year</th>
<th>Female Faculty</th>
<th>Male Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>6%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Chart 2 – Percentage of Faculty who Strongly or Somewhat Agreed: I feel isolated in my program.
Chart 3 – Percentage of Faculty who Strongly or Somewhat Agreed: I feel isolated on the University X Campus Overall

The percentage of male faculty who indicate that they have a good understanding of gender-related work issues and know ways to address them increased in 2013 (Charts 4 and 5). In interviews, several male faculty and administrators notes that the workshops and Advocates and Allies Program had contributed to this increase. Several male faculty were also able to give examples of strategies they had learned that can foster gender-equality. It is unclear why the percentage of women who agreed that they have a good understanding of gender-related work issues fell in 2013, given that we do not track responses by an individual over time. Given the small number of women, the data is sensitive to outliers. Faculty have been hired each year of the project, so it is possible that some of the newer hires either have not participated in all of the programs or simply were not at the university in the earlier years of the project and consequently are not as familiar with these issues as faculty who have attended all four years of programming.
Looking at efforts to increase retention of female faculty, the percentage of women has largely remained flat over the lifetime of the project (Chart 6). For the individual tenured/tenure-track levels, women have comprised between 11% and 19% of the faculty at the assistant professor level, 13% to 19% at the associate professor level, and 4% - 9% at the full professor level between 2010 and 2013, as seen in Chart 7. As a general comparison, NSF data for 2010 shows that women science and engineering hold 18% of...
the professor, associate professor, and assistant professor positions (those most likely to be tenured/tenure-track) and 19% of the other/rank not applicable positions (those most likely to be non-tenure track). Average time to reach full professor has not been tracked by gender, given the very small number (2) of women who have reached the full professor level.

Chart 1. COES Gender Composition by Tenure Status (2010-2013)

Chart 6 – College Faculty Gender Composition, 2010 – 2013

Percent of Tenure-Track Positions Held by Women Faculty

Chart 7 – Percent of Tenure-Track Positions Held by Women Faculty, 2010 - 2013
It should be noted that the university has experienced one to three budget cuts each year of the project, which have eliminated raises, reduced support for all activities, eliminated some faculty, administrator and staff positions, and increased the workload of all faculty and staff. In addition, the cuts have severely curtailed faculty hiring during this time period. Nevertheless, the percent of female tenure-track faculty hired during this time period has risen steadily since 2009-2010 (the first year of the grant), with over 50% of offers going to female candidates in 2013 for the first time (Chart 8). Note that there was a significant effort during 2006 – 2008 (prior to the grant), led by one administrator, to increase the number of female applicants, interviewees and hires.

![Chart 8 – Percentage of Applicants, Interviewees, Offer Recipients, and Hired Faculty for Tenure-track Faculty Positions in the College who are Female, 2006 – 2013](chart.png)

As for leadership, women held three of the 28 administrative positions (program chair, director or research director, associate dean or dean) in the college as of September 2012 (director is equivalent to department head in our college). This equates to ten percent of female faculty (up from 4% in 2010) and 30% of male faculty. For comparison, there are approximately 33 women engineering deans in the US19, out of approximately 533 accredited engineering programs20 (which would equate to approximately 6% of the available dean’s positions being held by women). In 2013, female faculty were slightly more likely than male faculty to report serving as the PI of a research grant (62% of females to 54% of males) or an educational grant (33% of females compared to 27% of males). In 2013, 28% of female faculty reported serving in another leadership role (graduate coordinator or faculty senate) versus 9% for male faculty. However, only 29% of female faculty agreed that their program had made an effort to promote women into leadership positions (compared to 50% of male faculty; p < 0.10).

Women faculty remain less likely than their male colleagues to agree that the campus has an adequate number of Worklife Policies (Chart 9) or that the faculty in their program
are well-informed about the existing policies (Chart 10). Note that while this difference was statistically different in 2011 and 2012, it was not true in 2013, suggesting that men and women views’ on this topic may be becoming more similar over time. The lack of formal, written worklife policies was considered to be a concern by many female and male faculty members. Not all faculty members may be aware that they can informally request accommodations when needed, and women in particular were reported to be less likely to ask for such informal assistance. Most interviewed faculty members and administrators supported instituting one or more worklife policies, particularly a policy outlining conditions under which the tenure clock could be extended.

Chart 9 – Percentage of Faculty who Strongly or Somewhat Agreed: This campus has an adequate number of worklife policies

Chart 10 – Percentage of Faculty who Strongly or Somewhat Agreed: Faculty in my program (department) are well-informed about the campus’ worklife policies.

Generally, both female and male faculty have expressed favorable views of the ADVANCE programs, with all but the Grant Writing Program receiving solid “very worthwhile” ratings. All of the female faculty described how they had benefitted from
one or more of the programs. Male administrators indicated that the programs have helped increase their awareness of equity issues and how to address them. They noted that the grant has been very good for the college and university and that they were pleased to have the grant. Data from 2012-2013, below, shows ratings for seven programs (Distinguished Lectures and Career Development Workshops are listed as separate activities, even though the line between those has been blurred over the life of the project, so that comparisons can be made from year to year). Ratings for prior years were similar.

Table 3 - Female and Male Faculty Members’ Ratings of ADVANCEing Faculty Program Activities in 2012-2013

<table>
<thead>
<tr>
<th>Program</th>
<th>Female Faculty</th>
<th>Male Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Very worthwhile</td>
<td>Moderately worthwhile</td>
</tr>
<tr>
<td>Career Networking Awards</td>
<td>86%</td>
<td>-</td>
</tr>
<tr>
<td>Mentoring Program</td>
<td>78%</td>
<td>11%</td>
</tr>
<tr>
<td>Career Development Workshops</td>
<td>73%</td>
<td>18%</td>
</tr>
<tr>
<td>Distinguished Lectureship Program</td>
<td>70%</td>
<td>-</td>
</tr>
<tr>
<td>Faculty Lunches</td>
<td>69%</td>
<td>23%</td>
</tr>
<tr>
<td>Executive Coaching &lt;sup&gt;2&lt;/sup&gt;</td>
<td>50%</td>
<td>25%</td>
</tr>
<tr>
<td>Grant Writing Program &lt;sup&gt;3&lt;/sup&gt;</td>
<td>-</td>
<td>80%</td>
</tr>
</tbody>
</table>

<sup>1</sup> 133% more female respondents rated the Career Networking Awards than received awards during 2012-2013.
<sup>2</sup> 100% more female respondents rated Executive Coaching than participated in this activity during 2012-2013.
<sup>3</sup> 42% more male respondents rated the Grant Writing Program than participated in this activity during 2012-2013.

Female faculty who received Career Networking Awards reported the experience as valuable for learning and developing relationships with new colleagues and noted that their experiences were bearing results. The majority of female mentees continue to be positive about the Mentoring Program, with 67% rating their mentoring experience as very positive and 17% as somewhat positive. Female mentees reported receiving more hours of mentoring (71% reported at least 6 hours of mentoring over the academic year) than male mentees (only 25% reported receiving over 6 hours) and female mentees reported discussing a wide range of topics, including career-related strategies, funding, and teaching practice. Female faculty who attended Distinguished Lectures/Career Development Workshops appreciated the interactive format of the workshops. Several male faculty who attended these noted that they were the most useful activities for them because the increase their awareness of problems and the group discussions provided lots of good perspective. Male faculty who attended the Advocates and Allies Program found it meaningful, noted that it exceeded their expectations, and appreciated the practical suggestions on how to be more supportive of female faculty. Most tenured or
tenure-track female faculty attended at least 33% of the monthly Faculty Lunches. Of those female faculty that did not participate in the lunches, two-thirds of them indicated that the reason was because the lunches did not fit their schedule. In interviews, 100% of female faculty reported that they appreciated the collegiality that the Faculty Lunch Program offered. They also valued the opportunity to meet and connect with other female faculty on campus. All but one of the current and former participants in the Executive Coaching Program indicated that it was useful to them. Participants noted benefits such as planning for career goals, encouraging them to speak up, and streamlining priorities. Female faculty who participated in the Grant Writing Program found the writing group helpful and a good investment of their time. They also appreciated the availability of grant submission assistance. One female faculty member who had utilized the assistance noted that it was incredibly valuable.

Transition to a Sustainable Status

Sustainability has been a major goal of the ADVANCE project since its creation. The project is currently in a no-cost extension year, which means that funding for programs is transitioning from grant to college funds. Several of the key programs (Mentoring, Faculty Lunches, Worklife Policies, Grant Writing) were created and managed in such a way that they could be largely sustained at the conclusion of the project. These programs are expected to continue post-grant, through funding for the Office for Women in Science and Engineering. Some programs (Career Networking Awards, Executive Coaching), because of their cost, were not expected to remain at the conclusion of the project. They were, however, designed in such a way that they had the potential to impact every eligible female faculty member during the life of the project. Other programs (Advocates and Allies, Distinguished Lectures, Career Development Workshops), either created or morphed as the project has grown and responded to the needs highlighted by formative assessment, are regarded as valuable programs and there is interest in maintaining them in some form, in spite of the costs that may be associated with them. These programs are expected to continue post-grant, although the Distinguished Lectures/Career Development Workshops will be scaled back to one per year and funded through the Office for Women in Science and Engineering budget.

The first effort at creating sustainable programs was the creation of the Office for Women in Science and Engineering (OWISE). No such office existed in the College prior to the ADVANCE grant. The goal was to create an entity that could serve as an umbrella under which new programs could reside. The Director of OWISE has served as the official administrator responsible for these programs during the grant. Second, even though the grant provided funding for the majority of the activities undertaken by OWISE, the Director requested, and has received, a small budget for OWISE from the Dean of the College every year since its creation. The goal, which has been communicated annually to the Dean, is for the budget for OWISE to be large enough by the end of the grant to support key programs in some form. Lastly, the College is near the end of a building fund-raising campaign for a new building for undergraduate teaching. One of the first three rooms funded in the campaign was the OWISE office suite. Not only will this help ensure the maintenance of the Office at the conclusion of the grant, but it has increased
awareness of its existence and attracted some additional funding for OWISE activities, which has expanded in the last three years to include programs aimed at undergraduate women in STEM fields.

Four of the eight programs were created with sustainability in mind. That is, they were designed to be low cost and capable of being managed by the OWISE Director. Activities associated with these programs that were time-consuming or costly were conducted during the grant period, wherever possible. These included development of training materials, training of personnel, etc. In addition, during this last year, aspects of these programs that were not sustainable long term have been re-envisioned and piloted using alternate format.

The faculty Mentoring Program, for example, continues to be a strong program and one in which there is considerable interest from tenure-track faculty. Given that training materials have been developed and modified during the first four years, it should be sustainable in its full grant format for the foreseeable future, assuming that the OWISE Office can support the very modest quarterly Mentee/Mentor Coffee Program; provide the annual training for new mentees and mentors; handle annual enrollment/re-enrollment, mentee/mentor matching, and assessment; and produce the monthly e-newsletter for participants in the program. The greatest need in the future is that the program will need to continue to evolve over time to remain fresh and interesting. Given that the program has survived the administrative re-organization of the College at the beginning of this academic year (which involved the OWISE Director and her responsibilities), it seems likely that the College is willing to make this program a priority.

The Faculty Lunch Program, like the faculty Mentoring Program, is very popular and there is considerable interest in maintaining it at the conclusion of the project. It was not sustainable in its grant form, however. Namely, funding for the lunches has been provided by the Dean (which will not likely continue post-grant) and the OWISE Director has provided the majority of the planning and training for the lunches. During this past year, a different format has been used for the program content. A steering committee of three women faculty have assumed responsibility for the faculty lunch programming. They worked primarily during the summer, supported by a small stipend provided by the grant, to plan and develop the 9 months of programming. This arrangement appears to be working well, with the steering committee members fully engaged and excited about participating and a good program of activities for the year. Attendance at faculty lunches this year has been good, although about 10 – 20% smaller than in the prior two to three years. The focus of the content has also changed, with less information on gender and climate issues and more information on topics such as teaching. Funding for the steering committee arrangement is the primary barrier for the future, but the university administration has expressed interest in finding a mechanism to maintain the lunches past the conclusion of the grant, so there may be funds available beyond the college level to sustain this program.

Worklife Policies, by nature, is not a program that should require long-term
maintenance. The goal of this program is to work toward implementing policies (such as modified duties and tenure-clock extension) that support female faculty. The program is on track to accomplish its goals by the conclusion of the project and, even if it should require some additional attention to see it to completion, project personnel are committed to see these through post-grant.

The Grant Writing Program is an example of a program that has morphed during the project in response to feedback from participants. Originally, it included specific training on writing successful grants, as well as funding for external reviews of proposals prior to submission and training for university staff to assist with grant submissions. Grant activities on training have included a statewide NSF Day, as well as multiple webinars. Webinars have proved popular and should be sustainable at the conclusion of the project, although some are fee-based and may prove challenging to maintain if the OWISE budget is not sufficient to cover at least a portion of the cost. The project has sought to co-fund fee-based webinars with the research office in the college in an effort to position such activities to be maintained at the conclusion of the project. Last year, an NSF CAREER Writing Group was organized for faculty planning to submit an NSF CAREER proposal. The group met once a week during the spring and learned about writing a successful proposal, heard from successful grantees, and reviewed a webinar and other materials focused on improving grant success. Feedback on that program was positive and it may be repeated in the future. Training on grant submissions was provided for university staff in year two of the project. Requests for such assistance have been manageable. Recent staff re-assignments may jeopardize the ability to fulfill these requests at the conclusion of the grant. Funding for training of future personnel (and assigning grant submission assistance as a job task) would require the support and assistance of the College or university and therefore may not remain long term. External reviews of proposals prior to submission (the most costly aspect of the program) was not popular, as faculty indicated that they did not have time to complete their proposals far enough in advance to participate in external reviews. Hence, it was dropped during year two of the project.

Several programs have either been created (Advocates and Allies) or modified (Distinguished Lectures, Career Development Workshops) during the project in response to formative assessment. These programs are popular and regarded as valuable and therefore there is interest in maintaining these at the conclusion of the project. Some of these either require an investment of time (Advocates and Allies) or significant funding (Distinguished Lectures, Career Development Workshops) which put them in jeopardy. For the next few years, it is feasible that the Advocates and Allies program for male faculty and administrators can maintain its quarterly meeting, provided there are sufficient faculty interested in preparing and running the program. We have used two male faculty (one being a male project co-PI and one an attendee) in the past, and this format is in the process of being revised to be structured more like the transitioning Faculty Lunch Program. At present, the number of male faculty with the expertise to run a program is small, hence the involvement of the project co-PI. Over time, new male faculty will not have benefited from prior workshops on gender and climate issues and this lack of knowledge may threaten the program or require that “catch-up” workshops be
held to educate newer male faculty. It is also possible that this group may morph into more of a male advocates program, with projects selected and implemented by participants. Based on formative assessment, the Distinguished Lectures and Career Development Workshops have relied on distinguished external speakers who come to campus to talk with multiple groups (women faculty, administrators, male faculty, etc.) about a specific gender-related issue (implicit bias, negotiation, leadership, imposter syndrome, etc.). This format seems to be very effective and there is considerable interest in maintaining this as an external speaker series. Given the significant cost of this program, however, post-grant it might be feasible to bring one distinguished speaker to campus, provided sufficient funding is provided in the OWISE budget or through another mechanism, such as a funded speaker series.

As part of the formative assessment at the end of year four, faculty were queried about sustainability of the ADVANCE programs. Faculty acknowledged that sustainability can be an issue. One female faculty, when asked about transitioning the programs to post-grant status, hoped that programs that have little cost associated with them, such as the Mentoring, Faculty Lunch, and Grant Writing Programs, would remain after the grant. She noted that faculty could pay their own way or that it could transition to a brown bag lunch. Both male and female faculty particularly wanted the Mentoring Program to continue. One male faculty member felt that it had enough momentum to survive beyond the grant and saw no reason to disband it. Female faculty appreciated the supportive network of faculty that the grant has created across and even beyond the college, as well as the support system that the programs provide for women dealing with special challenges. One female faculty member hoped that the online resources (presentations, newsletters, handouts from workshops) posted on the project website would remain as a very valuable resource. One male administrator wondered if the administrative restructuring of the college (under the new president) would reduce the likelihood that programs could be sustained. Another male faculty member, while noting the great benefits of the programs, was concerned about the impact of budget cuts on program maintenance long term. One female faculty member hoped that more people would find time to get involved and contribute so that the programs could continue.

**Lessons Learned**

Because this project was an adaptation and implementation grant, project personnel were required to find programs developed by other ADVANCE projects and modify those for our institution, goals and audience. Some of these programs were well-documented and easy to adapt. Others were not. In addition, some of the programs worked well from the start. Others required revision, tweaking, and adjustment over time. The Faculty Lunch Program has been successful from the beginning. Initially, it was envisioned that the program would use speakers from campus, but it proved to be both expensive and challenging to find speakers. Therefore the program utilized primarily project personnel to develop and deliver the content, prior to the recent transition. The Mentoring Program has worked well from the beginning, but it has been tweaked based on formative assessment. Initially, one of the faculty club dining rooms was reserved once a month to give mentors and mentees a location to meet. Even though participants indicated more
than once that they valued this opportunity, in reality none of them took advantage of it. Consequently, it was discontinued after 18 months. Instead, in response to requests to provide a scheduled activity to bring mentors and mentees together, a quarterly Come and Go Coffees program was instituted and it has been a huge hit. The timing (first thing in the morning), the format (come and go as your schedule allows), the ability to pick up a great resource on research or teaching (which you won’t get access to elsewhere), the opportunity to visit with other mentees and mentors, and the availability of Starbucks coffee and pastries seems to have made this a successful program. Worklife Policy efforts have been more challenging to move forward, but at least part of that has been due to changes in upper administration. Efforts by other peer institutions and support from the Faculty and Staff Senate have helped advance these efforts and project personnel are optimistic that these efforts will result in new policies. Enlisting the support and partnering with groups outside of the College have been key to those efforts. Parts of the Grant Writing Program have been less impactful than anticipated. Again, faculty indicate that they like having the grant submission assistance and early reviews of proposals on paper, but few took advantage of it. The NSF webinars and an NSF CAREER Writing Group have been more successful, so the focus has shifted to those activities the last few years. The Distinguished Lecturers and Career Development Workshops have merged over time to focus on bringing external experts to campus to speak on professional development, gender issues, and leadership. This approach has been viewed very positively by participants and seems to have directly impacted much of the culture and attitude changes that have been observed. The Advocates and Allies Program was created in response to requests from male faculty to learn more about what they could do to support and advance change around the gender issues about which they were learning. This program is morphing to provide more training (since new faculty come in to the university all of the time, who did not participate in much of the original training provided by the grant) and to engage a faculty team, much like the revised Faculty Lunch Program. The Career Networking Program was slow to get moving because women faculty simply weren’t asking for funds. The program has funded every request that was made. Applications have picked up over time as women faculty see other women getting funding to support useful activities. The most successful project funded by this program has been an external speaker series, which is now being funded by a variety of sources and has attracted the support of both on- and off-campus groups, including graduate students, research centers, etc. Lastly, the Executive Coaching Program was successful from the start in its original form. Virtually all participants valued it and all eligible faculty have participated. Because of the expense, it will not be continued.

Conclusion

Louisiana Tech University established a program four years ago, with funding from the NSF ADVANCE Program, aimed at building a more supportive climate for women faculty, increasing retention of women faculty, and providing training for professional development and leadership. The program has utilized a multi-pronged approach and adapted best practices from NSF ADVANCE projects to implement several initiatives. These have included a faculty lunch program, mentoring program, advocates and allies program for male faculty, worklife policies effort, grant writing program, career
networking awards, executive coaching program, and distinguished lectures/career development workshops. Program assessment to-date suggests that women faculty have made some gains in areas such as self-confidence and advocacy. Women faculty were also less likely to report feeling isolated on campus. A large number of male faculty report having a good understanding of gender issues and strategies for addressing them. As the project prepares to transition to post-grant status, programs that were designed to be sustainable from the start, along with those which have been re-tooled to a sustainable mode, seem to be working well. Additional data in future years will provide a clearer picture of the long-term effects of the project.

References


