Project Description

Introduction

Women have made significant progress in many fields including law, medicine, and management but they have not achieved parity with men in obtaining jobs, promotions, salary, or leadership positions (Bell & Nkomo 2001; Bowler 1999; Jacobs 1997; Tomaskovic-Devey 1993). Faculty women's advancement on these dimensions is similar to the progress of professional women workers outside of the university.

Faculty women are more likely than men to experience inequities in salary (Academe 1994; Bellas & Reskin 1994; Ferree & McQuillan 1998; Fogg 2003; Jasso & Webster 1999; Toutkousian 1998) other rewards (McElrath 1992), power (Stromquist 2005), and voice (Denton & Zeytinoglu 1993) in many American universities. Women are more likely to find a chilly climate (MIT 1999), lack mentoring, and to face challenges in balancing work and family obligations (Olsen, Maples, & Stage 1998; Perna 2001; Spalter-Roth 2004). In her comprehensive study of the progress of women in the professions, Valian (1998) concludes that the standing of women in academia is "mixed." Despite the increases in the number of women obtaining Ph.D.s, women are still underrepresented at the professorial rank and overrepresented at the lower ranks. Women faculty, including women faculty of color, at the University of North Carolina at Charlotte confront these problems. The proposed project addresses the status of women with an innovative strategy that will transform the University into one where all faculty perceive that access to power, rewards, promotions, and leadership opportunities are equitably distributed.

The *intellectual merit* of the project resides in the new knowledge that will be generated about the recruitment and retention of women in academia through careful assessment and evaluation of a comprehensive approach to reduce barriers for women to pursuing academic careers in STEM disciplines. The *broader impact* of the project will be evidenced by the increased numbers of women, including women of color, at all ranks in STEM disciplines and in leadership positions, university-wide.

Current Status

UNC Charlotte is the fourth largest of the 16 UNC System institutions. With an enrollment of more than 20,000 and a faculty of 850, UNC Charlotte offers more than 150 degree programs, including 14 doctoral programs in its colleges of Architecture, Arts and Science, Business, Education, Engineering, Health and Human Services, and Information Technology, and a university-wide Graduate School. The institution has grown rapidly since its establishment as a four-year institution in 1965. The first doctoral programs were added in 1993-94. As the only research institution in the state's major metropolitan area, UNC Charlotte is committed to offering a broad range of programs at all levels but has placed a particular emphasis on programs in STEM areas. Because of rapid growth in the student body and faculty retirements, UNC Charlotte has hired 50-100 faculty per year for the past four years. For example, during the 2004-05 academic year, UNC Charlotte hired 63 tenure-track faculty. Of these, 27 were in STEM areas. Thirty-five percent of the STEM hires were women: three of five hired at the associate professor level and seven of 22 at the assistant professor level. Of the 10 women hired, one was African American. In addition, two senior administrators were hired. Both are women, and one is Hispanic.

Student enrollment is projected to grow to 25,000 and in the last four years, FTE headcount in the STEM disciplines has increased by a total of 39%. As a result, we expect to continue to add significant numbers of new faculty. While this pattern of hiring offers the opportunity to increase the

number of women faculty, including women faculty of color, it also poses significant challenges to the system to provide the kind of institutional climate that would allow these women to succeed and advance in their careers.

Recent hires at UNC Charlotte, including in STEM fields, have improved the faculty's gender and ethnic diversity, however, the overall faculty remains disproportionately white and male, especially at the senior tenured ranks, and disproportionately female in the lecturer positions. For example, as of Fall 2004, UNC Charlotte STEM women faculty constituted 7% of the full professor, 22% of the associate professor and 32% of the assistant professor ranks. The university's leadership also remains disproportionately white male, particularly at the level of department chair where less than 15% are female.

Barriers to Advancement

Transforming the anatomy of the university (i.e., the numbers and positions of women faculty and administrators) is one of the challenges this University faces. Transforming the physiology of the university (i.e., the policies, practices, procedures, norms, and values that generate its climate) is the second. The UNC Charlotte ADVANCE project seeks to create an institutional climate and to develop strategies that will allow us to attract and retain women faculty, including women faculty of color, in tenure-track faculty positions in the College of Information Technology, the College of Engineering, and the mathematics, physical, life and social science departments in the College of Arts & Sciences ("STEM" faculty positions). Our focus on administrative and decision-making positions ("leadership" positions) will be university-wide. The program is designed to have sustainable institution-wide impact through changes in policy and practice.

Background: In 2001, UNC Charlotte faculty participated in a nationwide survey conducted by the UCLA Higher Education Research Institute (HERI). The survey assessed faculty attitudes, work loads, and perceptions regarding campus climate, faculty culture, and satisfaction with rewards. Forty percent of the UNC Charlotte faculty chose to participate. In Summer 2002, a campus committee was convened to use the HERI survey results to examine the climate at UNC Charlotte. Results indicated significant differences between men and women faculty on most items related to the three themes of faculty culture, perceptions of fairness, and satisfaction with rewards. Specifically, 46% of women had experienced stress as a result of subtle discrimination (as compared to 16% of male faculty); 73% of women agreed that women faculty are treated fairly (as compared to 94% of male faculty); and 37% of women faculty were satisfied with salary and fringe benefits, as compared to 57% of men.

The gender gaps in satisfaction, stress, and perceptions of fairness revealed by the HERI survey generated a series of actions by campus leaders, including a 2003 report to the faculty based on the HERI study. The report became the basis of several campus-wide discussions and the Provost launched a range of assessment efforts designed to help the University understand and improve the recruitment, retention, and success of women and minority faculty in all ranks and disciplines.

Focus groups conducted with 57 female faculty investigated the climate at UNC Charlotte. Briefly, these results suggested that women perceive the culture to be largely "male-dominated." There are relatively few senior women in most departments and few women in decision making roles. Many concerns reflected a perception that women's contributions were devalued and that standards for reappointment, promotion and tenure were inconsistently applied. Other concerns included inadequate mentoring and performance feedback, instances of sexual harassment, and exclusion from informal networks. Furthermore, women reported difficulties with balancing work and family demands (including child and elder care), dual-careers, and inflexible workload and leave policies. The results were presented to a Spring 2005 women's forum at which short and long term steps to improve the climate for women were formulated.

Concurrent with initiatives for identifying gender-equity issues for women faculty, comparable efforts were conducted with minority faculty and revealed an overlap in issues. In addition, faculty of color perceive a lack of intentional efforts to diversify the faculty. They also report experiences of isolation, marginalization, lack of support, and denials of the validity and importance of cultural differences. Such experiences were intensified for female faculty of color

UNC Charlotte's findings are far from unique. Other institutions report that women faculty and faculty of color, regardless of rank, are less satisfied than white males on most measures of career satisfaction (Pfeffer & Langton 1993; Grant & Ward 1997); that faculty want more mentoring but have difficulty getting it; that the dominance of white males in senior positions creates an institutional culture that is mono-cultural in an age of multiculturalism (MIT 1999; Singh, Robinson, & Williams-Green 1998); that family responsibilities (McElrath 1992; Perna 2001; Spalter-Roth 2004)and institutional service (Park 1996) demands hamper career development; and that existing flexibility in leave and other policies may go unused because they are not properly structured to meet faculty needs (American Council on Education 2005).

The extensive four-year self-study that UNC Charlotte undertook to explore equity, diversity, and inclusiveness suggested the following would remove barriers to women's advancement:

- Elimination of the sources of the perceived chilly climate.
- Policies and practices to promote a healthy balance between work and family.
- Innovations in job sharing, dual career programs, part-time positions, and re-entry programs.
- Programs for mentoring at all career levels.
- Leadership development for both existing leaders and emerging leaders that helps them understand the unique challenges facing women faculty and faculty of color.
- Remediation of gender inequities in salary, workload, and resources.
- Mechanisms for ensuring accountability of administrators for diversity, equity, and inclusiveness, and the creation of a university-wide culture that supports all faculty.
- Creation of an infrastructure that sustains improvements in the status of women faculty.

Vision: With the UNC Charlotte ADVANCE project, we will bring about changes in our institutional policies and practices, and create the infrastructure to provide a sustainable climate that supports the recruitment and career progression of women STEM faculty and women leaders in reaching fulfilling careers in the highest academic and administrative ranks.

Goals: The UNC Charlotte ADVANCE project goals are focused on the recruitment, retention, and advancement of women in STEM faculty positions and women in university-wide leadership positions. We aim to increase the presence of women at all ranks by fostering an inclusive, equitable institutional climate and by removing the barriers to women's advancement.

Program Innovations: Four innovations distinguish the UNC Charlotte ADVANCE project. First, because the extensive self-study revealed the contours of our university's challenges, this project will start with the design and implementation stages. Second, this project will be broadly inclusive by engaging men and non-STEM women faculty at all stages and levels of this project. Third, we propose multiple opportunities and entry points into the portfolio of support mechanisms to increase the visibility of the program and the likelihood that every female faculty member will be engaged, and we will offer support and development for women at all levels of the institution. Fourth, UNC Charlotte is positioned to serve as a laboratory for the UNC statewide system.

Anticipated Impact: Although the project activities are designed for women in the STEM disciplines, we believe that the systemic changes brought about by this project will result in holistic institutional transformation. UNC Charlotte's ADVANCE program is also expected to serve as a model for other universities, particularly the other 15 institutions of the University of North Carolina system where *over the next decade an estimated 10,000 faculty will be hired.*

Conceptual Framework

The conceptual framework that informs UNC Charlotte's ADVANCE Institutional Transformation project rests on three related propositions:

1. Structural forces and social psychological processes interactively generate and perpetuate the gender inequality that women faculty experience and perceive.
2. In general, faculty with greater access to institutional resources tend to have more successful academic careers. Institutional norms, practices and policies under which universities distribute resources and rewards result in members of groups with lower social status — typically women and people of color — having less access to resources and, consequently, being less likely to advance within the existing reward structure.
3. Decision-makers' assumptions, attitudes, and stereotypes systematically undermine women faculty members' fair access to institutional resources (MIT 1999).

The processes responsible for gender differences in faculty salaries illustrate the interplay between structural and social psychological factors that generate gender inequality. With respect to salary, two key processes are traditional sex discrimination—paying equally qualified and experienced men and women differently for the same job— and sex-composition discrimination. Bellas and Reskin (1994) found that sex- composition bias results in an earning penalty associated with the attitudes and stereotypes that devalue women's work. Female and male faculty in female-dominated disciplines or subspecialties experience sex-composition bias in the valuation of their scholarship. Universities working to eliminate salary bias must address both discrimination and more subtle sex composition-bias in starting salaries and merit raises.

Structures that inhibit the progress of women may be formalized in institutional policies. For example, a university's policies may limit flexibility in balancing work and family. With respect to recruitment or career advancement, the composition of key committees, e.g., search committees or promotion and tenure committees (Mickelson & Oliver 1991; Moore 1990; Tolbert, Simons, & Rhee 1995), may not recognize or value the contributions or achievements of women candidates or faculty (Allen 1990, Park 1996; Spalter-Roth & Lee 2000). Furthermore, a university may permit hiring practices that allow starting salaries and start up packages to disadvantage women. There are also other structural forces that may be informal in nature. For example, mentors and networks are critically important for successful academic careers (Granovetter 1982; Moore 1990). From graduate school through early stages of academic careers, men are more likely to be mentored than are women, and minority women receive less mentoring than do whites. Marx and Leicht (1989) reported that men and women use similar job search strategies but women and men's informal networks operate differently and do not produce similar career outcomes.

Institutions typically provide few safeguards against differences in resource distribution by gender. Studies have shown that faculty women's salaries lag behind men's even when experience and credentials are controlled (Bently & Blackburn 1992; Fogg 2003). Often the discriminatory processes responsible for the gender wage gap are subtle, even unrecognized by those who practice them. Research consistently shows several factors contribute to the gender gap in salary:

- Starting packages for men and women still differ in ways that favor men.
- Once in place, initial salary gaps tend to cumulate and widen over time through allocation processes that are a function of base salary.
- Men and women often have different work assignments. Women's underrepresented status, especially that of women of color, means they are in demand for committee work. Compared to men, women teach more, perform more service, and consequently, may publish less (Dubeck & Borman 1997).

- Research productivity is related to laboratory space, teaching and service loads, initial startup packages, access to mentors, and informal networks. Studies find that women have less access to these resources and, consequently, show less scholarly productivity than male peers—other factors being equal (Spalter Roth & Lee 2000).

Family status is also related to academic career success. Studies indicate that tenure clocks do not correspond to women's biological clocks. Untenured faculty women with children report strain from balancing their family and professional responsibilities. Women who delay childbearing or limit family size to one or none do better at obtaining early career success (publications, grants, and tenure) than those who do not (Spalter-Roth 2004). In the sciences, men who have children early in their careers are much more likely to attain tenure than women who have children early. Tenured women in the sciences are twice as likely to be single than are men (Mason & Goulden 2003).

The social psychological factors that impede the progress of women in academia are in many ways more difficult to combat than structural factors that may be more easily identifiable. Since women, as a clear and identifiable minority, stand out in an academic setting (Taylor 1981), distinctions related to gender are more salient. This results in nearly automatic and often unconscious activation of stereotyped beliefs (Wilson, Lindsey, & Schooler 2001; Banaji & Greenwald 1994). Under appropriate conditions, these beliefs can be suppressed to prevent overt expression of the beliefs through biased or discriminatory behaviors. However, inadequate suppression can often produce behaviors that may be biased even when this is not the intention of the individual (Crandall & Eshelman 2003). For example, nonverbal behaviors reflecting bias may occur even as the person is verbally expressing unbiased beliefs (Butler & Geis 1990). Furthermore, other forms of 'benevolent sexism' may replace the more obvious hostile behaviors, while still representing biased beliefs that demean women and their accomplishments (Glick et al. 2000). Thus, even in the absence of more obvious and overt discrimination, women may be exposed to a variety of subtle, perhaps unconscious, behaviors that contribute to their perception of a chilly climate. Clear institutional norms that oppose expression of negative stereotyped beliefs will increase efforts to suppress underlying prejudices (Crandall, Eshelman & O'Brien 2002).

In cases where there are individual instances of women in leadership positions, those in power can and might perceive the situation as fair, since there are examples of women achieving success. This intentional or unintentional 'tokenism' can lead to less effort to suppress stereotyped beliefs and also can have the effect of leading other women who have not been as successful to assume greater personal responsibility for their lack of success (Schmidt et al. 2003). Since women in these settings are in the minority, and are often isolated, they may not recognize the situational forces that are influencing their experiences. For example, women faculty in the sciences at MIT did not individually appreciate the subtle discrimination each was experiencing until they compared their experiences and saw the clear and consistent situational pattern (MIT 1999).

A series of meta-analyses on gender and leadership (Eagly & Johnson 1990; Eagly, Karau, & Makhijani 1995; Eagly, Makhijani, & Klonsky 1992) found that while overall differences between evaluations of women and men as leaders were minimal, women leaders were evaluated more negatively in settings where they were a clear minority. This was especially true when males were the evaluators. Additionally, if the woman leader was in an area perceived as inconsistent with gender stereotypes, she was viewed as less effective (Eagly et al. 1995).

Women faculty in science and engineering also are likely to find themselves subjected to evaluations based on norms developed in a male dominated context. In a survey of faculty, it was found that women were more motivated by social concerns and helping others, while men were more motivated by self-enhancement and by money (Astin & Cress 1998). This can result in biases against the professional activities that may often be selected by women. For example, one recommendation that resulted from a study on women's experiences in psychology departments was

that areas of research often favored by women were not being judged equally and should be granted equal respect (Fouad et al. 2000).

UNC Charlotte's extensive four-year self-study identified how structural and psychological factors deterred women in STEM disciplines from being recruited, retained, and subsequently advancing to the highest academic and administrative ranks. Our ADVANCE project will produce necessary changes in the University's structure and climate to eliminate or mitigate these deterrents.

Strategies to Expand Participation of Underrepresented Minorities

The ADVANCE Program extends and expands a number of current initiatives developed by the existing university-wide Minority Presence Planning Committee. The recommendations of this committee (made up of faculty, staff, and administrators) have guided UNC Charlotte's recent efforts in recruitment of women and underrepresented minorities. For example, in Fall 2004, the university and the Division of Academic Affairs formally adopted a specific goal related to diversity. Each college now includes a diversity goal in its five-year strategic plan. In the annual evaluation of the deans, the Provost has included a component addressing the effectiveness of the dean in promoting diversity. University-wide workshops have been established for faculty search committees to share effective practices for the recruitment of women and underrepresented minorities, and a 'target of opportunity' program has been used to provide support to the colleges for hiring of dual career couples, underrepresented minorities, and women in STEM disciplines. Through the Doctoral Scholars Workshop of the Southern Regional Education Board, we have publicized faculty openings in STEM areas to a large number of underrepresented minority doctoral candidates and have begun to establish personal relationships with minority students in the doctoral pipeline. Two colleges have started diversity training for administrators to improve the climate for women and faculty of color. We support the participation of women from our campus in the UNC Bridges Program, a women's leadership development program run by the University of North Carolina system. While we have a sizable UNC Charlotte "Bridges Alumnae" group, we have not had sufficient participation by women of color. Making leadership development available to faculty women of color will be an ADVANCE priority. Through the ADVANCE Program, we will extend and institutionalize the efforts described here. The proposed Committee on the Future of the Faculty and the Faculty Affairs Office will continue the work of the Minority Presence Planning Committee.

Performance Plan and Methodology

Our goals are the recruitment, retention, and advancement of women in STEM faculty positions and women in university-wide leadership positions. We aim to increase the presence of women through activities focused on the university's structure, broad faculty awareness and engagement, and decision-maker accountability. We will address both structural forces and social psychological processes to generate and sustain gender equity. We address structural forces through revised organizational structure and policy to support gender equity. We address social psychological processes through activities aimed at increasing awareness of ADVANCE issues and engaging administrators and faculty as active participants in institutional and normative transformation processes. We aim to sustain the gains realized during the ADVANCE project through structural change and accountability among leaders and decision-makers.

Table 1 lists our measurable goals and examples of our planned ADVANCE activities.

Table 1: UNC Charlotte ADVANCE Goals, Outcomes, and Example Activities

Goal 1: Recruitment	Goal 2: Retention	Goal 3 Advancement
Desired Outcomes: Increased number of STEM women, including women of color, interviewed and hired at all ranks	**Desired Outcomes:** a. Increased number of STEM women, including women of color, at all ranks b. Gender equity in views on climate and in salary, workload, resources & recognition	**Desired Outcomes:** Increased number of women, including women of color, in full professor and leadership positions
Example Activities: *Structure* o FAO infrastructure o FFC focus on policy (e.g., dual career hires, start-up support) *Engagement/awareness* o Leadership Institutes programs o Solutions teams *Accountability* o Provost's Office data collection, analysis, annual reviews	**Example Activities:** *Structure* o FAO infrastructure o FFC focus on policy o Women's Academy o Leadership Institutes *Engagement/awareness* o Solution teams o Cone Fellowships o Leadership Institute and Women's Academy programs *Accountability* o Provost's Office data collection, analysis, annual reviews	**Example Activities:** *Structure* o FAO infrastructure o FFC focus on policy o Women's Academy o Leadership Institutes *Engagement/awareness* o Cone Fellowships o Leadership Institute and Women's Academy programs *Accountability* o Provost's Office data collection, analysis, annual reviews

Faculty Affairs Office (FAO)

We propose to establish a sustainable ADVANCE infrastructure, as illustrated in Figure 1. At its core is the Faculty Affairs Office (FAO), charged with engaging men, as well as women, in new initiatives to reshape the university climate to one that supports faculty having varied professional and personal life goals. The office will provide the data, outreach and support necessary to catalyze the changes required to accomplish this mission. In addition to fostering faculty awareness and engagement through the Leadership Institute, the Women's Academy, and the Outreach and Dissemination Module, the FAO will support faculty and administrators who adopt or initiate new ADVANCE activities through a competitive awards program (Cone Fellowships and Solutions Teams). The FAO will review progress reports generated from monitoring the awards to the Solutions Teams and campus progress towards overall ADVANCE project goals. The FAO will also be responsible for disseminating information about program accomplishments and challenges to both the campus and the broader research community. To ensure that the structural changes needed to meet ADVANCE goals are in place and sustainable, the FAO will support the Future of the Faculty Committee which will undertake the crucial task of policy reform.

The innovative approach of the FAO is twofold. First, the approach is to engage men, as well as women, to address university climate issues through the Committee on the Future of the Faculty and program elements detailed below. Second, the approach provides information and support about ADVANCE issues and allows faculty and administrators to adopt or develop their own program models that best fit their units. A final, and critical, aspect of our proposed ADVANCE infrastructure is that university administrators will be held accountable for addressing and making gains toward ADVANCE goals. For that reason, the FAO will be located in the Provost's Office and additional responsibilities will be added to the Provost's Office.
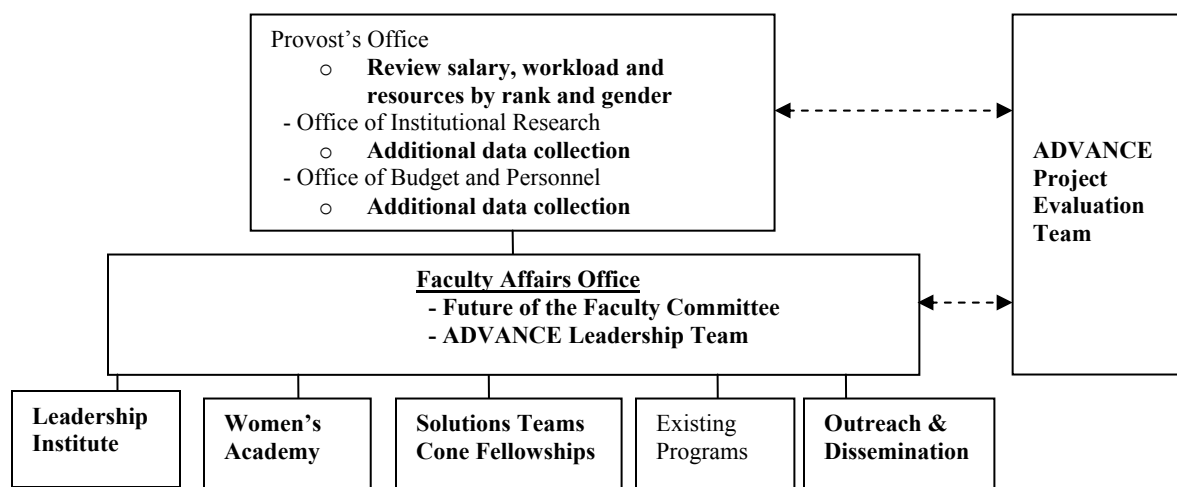
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│ Provost's Office                              │              │              │
│      o   Review salary, workload and          │              │              │
│          resources by rank and gender         │ <----------> │  ADVANCE     │
│  - Office of Institutional Research           │              │  Project     │
│      o   Additional data collection           │              │  Evaluation  │
│  - Office of Budget and Personnel             │              │  Team        │
│      o   Additional data collection           │              │              │
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         │     Faculty Affairs Office                 │ <----> │              │
         │   - Future of the Faculty Committee        │        │              │
         │   - ADVANCE Leadership Team                │        └──────────────┘
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│Leadership│ │Women's   │ │Solutions     │ │Existing  │ │Outreach &    │
│Institute │ │Academy   │ │Teams         │ │Programs  │ │Dissemination │
│          │ │          │ │Cone          │ │          │ │              │
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Figure 1: UNC Charlotte ADVANCE Infrastructure
** Boldface indicates new offices or new responsibilities for existing offices

Future of the Faculty Committee (FFC)

The Future of the Faculty Committee is the policy arm of the FAO. The committee will examine data, recommend policy change, review evaluation reports on ADVANCE programs and recommend program changes, monitor institutional progress towards ADVANCE goals, and advise the administration on the general adoption of successful practices. The FFC will initially be guided by the results of UNC Charlotte's extensive four-year self-study and will seek to remove any policy barriers that are judged to prohibit the implementation of effective recruiting and retention practices. The committee will replace the Minority Presence Planning Committee (MPPC) that has concluded its work and has made recommendations for change that are included here. The make-up of the FFC will be modeled on the MPPC and will include a mix of deans, chairs, faculty, administrators and legal counsel. The FFC will be asked to review:

- The Academic Affairs Personnel Handbook
- College and department recruitment practices
- Evaluation mechanisms for chairs at the time of reappointment
- Annual data on equity by gender and race/ethnicity (hiring, promotion, start-up packages) and ADVANCE program progress
- The effectiveness of current family leave policies
- The outcomes of ADVANCE initiatives

The review process will inform committee efforts to:

- Recommend policy changes
- Seek creative mechanisms to meet the childcare/eldercare needs of faculty
- Explore mechanisms to retain STEM women through flexibility in appointments and re-entry programs.
- Examine and make recommendations concerning increased flexibility in the tenure clock

ADVANCE Leadership Team

The ADVANCE Leadership Team (ALT) is the programmatic steering and support arm of the FAO. The team is comprised of STEM faculty and staff (co-PI's and Senior Personnel for this

project) who have demonstrated leadership in ADVANCE initiatives. The ALT will assist the FAO staff with development and implementation of programs within the FAO and with supporting the Solutions Teams efforts. The ALT support will include providing links to existing internal resources and external consultants.

ADVANCE Competitive Awards Programs (Cone Fellowships and Solutions Teams)

The ADVANCE program will make competitive awards designed to stimulate creative approaches for advancing women faculty and administrators through an annual competition. Two types of awards will be offered: individual (Fellowships) and unit based (Solutions Teams). The FAO will provide program support to review proposals, administer awards, and review the results of the projects. UNC Charlotte STEM and social science researchers as well as external consultants from other ADVANCE projects will be enlisted to review the projects. Individual awards will be in the form of *Bonnie Cone Fellowships,* semester long reassignments of duties (named for Dr. Bonnie Cone, mathematician and founder of UNC Charlotte). The Cone Fellowships will allow women in STEM disciplines to explore administrative careers at UNC Charlotte or other institutions, similar to ACE Fellows, or offer opportunities to visit other laboratories or facilities for research or mentoring.

The unit-based awards or *Solution Team* program will be open to all STEM units. Emphasis will be placed on engaging departments and colleges to examine the status of women, including women faculty of color, and encouraging the development of new ideas to address the specific needs of the unit. The Solution Team applicants will be expected to show understanding of the issues that inhibit the progress of women in academia, will be encouraged to examine the strategies used by other ADVANCE programs, and will be expected to propose assessment and dissemination of the project outcomes. The FAO staff and the ADVANCE Leadership Team will provide access to information and conduct "technical workshops" to assist in proposal development. We envision that departments might seek support for:

- External mentoring opportunities for women to work with mentors at other institutions.
- Positions for partners or experiments in job sharing for units with opportunities to recruit dual career couples.
- Use of salary available as a result of the university phased-retirement program to create part-time options.
- Start-up support for exceptional needs of newly hired women faculty.
- Transition support for faculty members returning after FMLA or other career interruptions.
- Options for backup childcare or eldercare.
- Off-site retreats to allow units to explore the climate for women faculty with the assistance of a consultant as a facilitator.

Leadership Institutes (LI)

UNC Charlotte has used institutes to introduce a variety of interactive hands-on short courses for faculty on topics such as curriculum development or technology use. The Leadership Institute proposed here would be structurally similar, with a focus on developing existing and emerging leaders. LI programs for administrators and emerging leaders provide tools for those who will be held accountable for the progress of their units. LI-sponsored activities will include:

- *Leadership for Chairs*: Chairs play a key role in creating and sustaining the institutional climate in which faculty work. We will host programs for new and continuing chairs to address specific local needs (e.g., effective annual faculty evaluations, search strategies to increase diversity, discussions of the gender equity literature, conflict resolution) and to examine ways to improve the climate for women in their departments. Chairs will be encouraged to engage their faculty in these efforts and to develop Solution Teams. The LI

for chairs will also be open to those who may be interested in moving into these positions so that we can begin to build the next cadre of informed, effective leaders.

- *UNC Charlotte Bridges*. Because the demand for leadership development exceeds the capacity of The UNC System Bridges Program, we will provide local leadership development opportunities for women faculty and administrators with an interest in assuming leadership positions in academia. Alumnae of the UNC Bridges Program and external consultants will conduct these Institutes. The Charlotte Bridges LI will also serve as a forum where women who have been Bridges participants can network and develop new peer relationships.

Women's Academy (WA)

Academies have historically been used at UNC Charlotte to provide an interdisciplinary forum for faculty to discuss topics that may lead to new programs, collaborations, or research centers. The ADVANCE Program will establish a new Women's Academy to serve as a structural focal point for activities that support women faculty by highlighting their work, reducing isolation, and improving access to mentoring. WA-sponsored activities will include:

- A *colloquium series* open to the entire campus community to highlight the work of women in STEM disciplines and to bring speakers to campus who will draw attention to and enrich the work of UNC Charlotte women faculty.
- *Quarterly women's networking luncheons.* The format will vary, but it will always include some time-structured networking and transformational activities (e.g., effective communication, negotiation strategies, understanding the accumulation of advantage, time management). These networking luncheons will be open to all women faculty.
- *Career Development Circles.* We enjoy an active set of "Teaching Circles" on campus. These meetings provide informal opportunities for cross-sections of faculty to gather regularly to problem-solve and exchange ideas about a variety of topics related to undergraduate instruction. They are an important mechanism for new faculty to develop mentoring relationships with experienced faculty. The Women's Academy will broaden the mentoring opportunities available by sponsoring Career Development Circles for faculty at all levels, from entering assistant professors through administrative positions (e.g., chairs, assistant and associate deans, etc).

Outreach and Dissemination

The FAO will be charged with communicating the goals of ADVANCE and their office mission to the campus community, to the UNC university system and to the broader academic community. An integral feature of the FAO outreach program will be to use their visibility and programmatic initiatives to generate and maintain interest and participation of campus citizens in its work. This will include visits to the various college faculty meetings, use of an electronic ADVANCE newsletter, and publications to educate faculty about gender research relevant to women faculty success and leadership development. In addition, the FAO will continue the gender and ethnic diversity workshops for search committees initiated in 2004-05.

New Responsibilities in the Provost's Office

The Office of the Provost is critical to the success of the project, since it is the Provost who hires and evaluates deans, distributes new faculty positions, makes the final recommendations on promotion and tenure, and approves the appointment and re-appointment of department chairs. The Provost's Office currently reviews data on starting salaries and salary increases. At present, however, all information about start-up packages, space, search committee membership, and membership on reappointment, tenure and promotion committees is held within the colleges.

With the initiation of the ADVANCE Program, the Provost's Office will ensure that data on hiring, salaries, start-up packages, space, reappointment, promotion and tenure are collected and transmitted to the FFC. The Office of Institutional Research and the Office of Budget and Personnel housed in the Provost's Office will be charged with these tasks. The Provost will also ensure that faculty evaluations of deans' and department chairs' effectiveness in promoting diversity and the advancement of women will be assessed during annual and five-year reviews of deans and three-year reappointment decisions for chairs. The Provost will also use quarterly meetings with department chairs to discuss and promote the ADVANCE project.

Evaluation Plan

We envision a multi-tier evaluation process in which the following units will be involved: the Provost's Office, the Program Evaluation Team (PET), the Faculty Affairs Office (FAO), the ADVANCE Leadership Team, and the Future of the Faculty Committee (FFC).

- The PET will be responsible for identifying all formative and outcome measures, coordinating the collection of these measures and the NSF-specified quantitative indicators, and generating and maintaining a data base for all formative, outcome, and quantitative indicators. The PET will assist the Faculty Affairs Office and ADVANCE Leadership Team in developing measures to evaluate specific ADVANCE initiatives, as described below. The PET will work with the other groups to ensure that formative data are used as the basis for continuous improvement over the award period.
- The Provost's Office will provide the PET with the data specified in the NSF guidelines for quantitative indicators and will be responsible for the review of salary, workload, and resources by rank and gender, and for sharing its findings with the PET. It will also work with the Faculty Affairs Office to ensure that ADVANCE goals are aligned with the University's Strategic Plan throughout the life of the award, and that evaluation results are used as the basis for Plan revisions.
- The FAO will be the clearinghouse for all data related to the University's Faculty Diversity Goals, including the ADVANCE evaluation data described above. The FAO will be responsible for reviewing and integrating the data from these multiple sources and sharing it with the Future of the Faculty Committee. The FAO and the Future of the Faculty Committee will then use the data as the basis for the continuation, revision, or redirection of ADVANCE initiatives. The FAO will also work with the Future of the Faculty Committee to benchmark its initiatives and progress against other institutions, including "best in class" and similarly-situated universities. This Office will be responsible for submitting an Annual Report to the Provost's Office that incorporates input from all ADVANCE modules and subcommittees.
- The ADVANCE Leadership Team will work with PET to ensure that each ADVANCE activity is evaluated, using appropriate formative measures, as specified below.

This process will ensure that needed linkages occur between planning, implementing, evaluating, and improving ADVANCE initiatives. Over the course of the funded activities, data will be collected to assess the changes in administrative structure, policy changes implemented, levels of involvement in ADVANCE activities, satisfaction with ADVANCE activities, and potential changes in climate, as well as the NSF quantitative indicators.

Overall/Summative Indicators of Progress. Data will be collected annually, beginning with baseline data covering the two years prior to implementing the ADVANCE activities. An annual report tracking changes across years will be provided by the Evaluation Team. Ultimately, these data will

reveal the overall success of the planned transformation. Table 2 provides a time line for assessment of the different activities.

Table 2: Program Implementation and Evaluation Time Line

Program Activity	Year 1	Year 2	Year 3	Year 4	Year 5
Setup FAO structure (Fig. 1)	X				
Develop materials for Competitive Awards Program and for professional development of leaders	X				
Establish accountability in the Provost's Office	X				
Implement FAO structure	X	X	X	X	X
Award grants through competitive awards program	X	X	X	X	X
Implement accountability	X	X	X	X	X
Evaluation Activity					
Formative Evaluation: Implementation & Process	X	X	X	X	
Formative Evaluation: Feedback loop		X	X	X	
Summative Evaluation: Baseline data	X				
Summative Evaluation: Outcome data			X	X	X

Formative Indicators of Progress.

Changes in infrastructure. During the first year of support, the Faculty Affairs Office, Future of the Faculty Committee, and ADVANCE Leadership Team will be established and will begin to design and implement the various activities proposed within each of the subcomponents (LI, WA, ADVANCE Competitive Awards Program, O & D). The first year evaluation will focus on whether the infrastructure has been established and staffed, and if progress has been made in implementing the activities.

Indicators of progress. The Faculty Affairs Office will provide an annual report to the PET indicating the activities completed and in progress for the Future of the Faculty Committee and each subcomponent. For the Future of the Faculty Committee, the report will indicate what policies and/or practices have been reviewed and what recommendations have been made and implemented. Based on these changes, the PET will identify any additional data, beyond those included in the Overall Indicators of Progress that would be needed to evaluate the effectiveness of the proposed changes. For example, if changes in family leave policies are implemented, the effectiveness of the changes will be assessed.

The FAO will report annually on the number and type of LI and WA events sponsored, numbers of individuals participating, and evaluations of the participants' perceptions of the effectiveness of the events. For the ADVANCE Competitive Awards Program, the FAO will report on number of consultations completed, grants funded, projects completed, and changes implemented through grant-supported activities. Completed or planned outreach activities will be documented as well as an assessment of the perceived success of all FAO-sponsored activities in meeting the ADVANCE goals, and a plan identifying any changes anticipated in future activities. The PET will evaluate the annual reports and provide feedback if changes are identified as needed.

Changes in climate. Changes in perceptions of the climate are unlikely to be significant during the initial stages of the ADVANCE activities, but we expect incremental improvement will become evident over the course of the funded period.

Indicators of progress. We will use the following indicators to track our progress:
   a. UNC Charlotte will continue to participate in the UCLA HERI Survey every four years and will administer the HERI items related to fairness, climate, and faculty satisfaction in

additional years to provide data for ADVANCE assessment every other year. The data already collected in 2001 and 2005 will be used as a baseline, and changes will be tracked over time. Special efforts will be made to ensure participation in STEM departments, but all faculty will be invited to participate to enable comparisons to non-STEM departments.

b. UNC Charlotte will participate in the Harvard study on climate perceptions of early career faculty through the UNC System, in 2005-06. This will be used as baseline data for tracking faculty perceptions of climate, and changes over time. These data can then be used to compare with other UNC institutions. Both the HERI and the Harvard studies will provide benchmarking data and are independently conducted.

c. A Mentoring Satisfaction survey will be administered to all untenured faculty in STEM departments each year.

d. Exit interviews (already a measure collected through the Provost's Office) will be used to better understand the reasons for our failure to retain women and faculty of color.

The PET will be responsible for evaluating the data from these sources and providing an assessment of the climate each year and providing evaluation feedback to various institutional actors. The evaluation feedback provided each year will be incorporated into the following year's formative evaluation.

Management Plan

The project will be headed by the ADVANCE Leadership Team composed of the Provost and faculty with knowledge of the issues and a commitment to change: Drs. Dahlberg, Coger, Hilger, and Tong, and Ms. Blat. The Provost will chair the Leadership Team, which will be responsible for the overall direction of the project. The FAO will be headed by a Director, Dr. Kim Buch, who will have day-to-day responsibility for the project and will work with the Leadership Team to carry out the action plan. A project manager will assist the Director, with help from two graduate assistants. The FAO's outreach and dissemination efforts will be supported by Dr. Charlynn Ross, a member of the UNC Bridges steering committee and faculty whose background is in communications.

The Chancellor will appoint the initial Future of the Faculty Committee for a 3-year term, after which faculty and administrators can apply or be nominated for positions on the committee. Dean Karen Schmaling from the College of Health and Human Services will be the first chair of the FFC. The FAO Director will provide staff support for the Committee. A separate evaluation team will be composed of social science faculty, Drs. Cann and Mickelson, who will report to the FFC. The results of evaluations will be shared with the deans, department chairs, and the Chancellor's Executive Staff to increase knowledge of the project and stimulate campus-wide discussion. Results of the formative assessments will be shared with the faculty as was done with the HERI survey, and will be presented to the Faculty Executive Committee and Faculty Council. Also, a presentation structured to guide discussion in faculty meetings will be made available to deans and department chairs. Modifications of the program will be recommended by the FFC and Leadership Team.

Sustainability Plan

UNC Charlotte is a relatively new institution of moderate size with a history of continuous and rapid change. We are less entrenched in tradition than many institutions with a longer history. Our self-study has identified areas where change is needed and a number of steps have been taken to begin to address the problems of women faculty, including women faculty of color. We have set goals throughout the institution to recruit and retain a diverse faculty and individual colleges have developed action plans to meet those goals. Each College has articulated effectiveness measures and

performance outcomes in their academic plans. These initial steps indicate a readiness on the part of the institution to undertake institutional transformation. The groundwork laid in the past four years has raised the awareness of faculty, staff, and administrators about issues of gender and race equity, inclusiveness, and how integral these issues are to accomplishing the university's mission. The university community— across gender, race, and ethnicity groups— is "primed" for change, perhaps more so than at any time.

Placement of the project in the Provost's Office allows for direct access to institutional research and the data needed to assess progress and creates institutional accountability. The contributions of the Provost's Office will serve as UNC Charlotte's institutional contribution to the project. The establishment of a specific office to address the future of the faculty will not only provide a visible focus for the project, but will extend its life beyond the project period. The project activities have also been designed to engage the faculty and administration broadly in generating solutions to the problems that confront us. We will seek private funds to endow aspects of the program such as the Cone Fellowships and Women's Academy. Finally, the project will put in place a mechanism for review and consideration of institutional policies that focus on the creation of affirmative solutions to the changing demographics of academia.

Dissemination Plan

Dr. Lorden serves on the Executive Committee of the Council on Academic Affairs of the National Association of State Universities and Land Grant Colleges and can organize programs on ADVANCE at the Annual Meeting. In addition to the work of the Outreach and Dissemination Module of the FAO, during the award period, PIs will attend professional and scholarly meetings such as the American Society of Engineering Educators, the Association of American Colleges and Universities (especially the meetings on Faculty Development and Diversity), and the American Psychology Association where they will present papers based on UNC Charlotte's ADVANCE project. We will also establish and maintain a website that will be used to publicize the work of the project and link to other ADVANCE sites. As a member of a large state system, UNC Charlotte is in a position to serve as a laboratory to test innovations that could later be disseminated throughout the entire UNC system after the award period. Doing so would leverage the impact of the project beyond the single campus. Publications are planned for journals such as *Prism, Journal of Engineering Education, Journal of Higher Education, Gender and Society, The Pyschology of Women Quarterly, and Academe.*

Results from Prior NSF Support

PI: Joan Lorden
As Associate Provost for Research and Dean of the Graduate School at the University of Alabama at Birmingham, Dr. Lorden was the principal author of the UAB ADVANCE application, but accepted a position at UNC Charlotte before the UAB award was made. She continues to serve as an advisor to the UAB project.

Co-PI: Kim Buch
Award: NSF EEC 9727411. "SUCCEED Project Assessment Campus Implementation Team." Buch, K., & Shelnutt, J., (2000). $20,000. Continuation funding: "SUCCEED Project Assessment Campus Implementation Team." Buch, K., & Audette, R., (2001). $20,000.
Summary: Southeastern University and College Coalition for Engineering Education was funded in 1993-97. Stated goals included: restructuring the undergraduate engineering curriculum, improving the quality and quantity of engineering graduates, and increasing the numbers of minority, women, and

handicapped students and faculty. A second award supported activities 1998-2002. The first five years consisted primarily of PI-led projects aimed at developing and testing instructional and curricular innovations at one or a few member institutions that could be disseminated to other institutions and institutionalized. The second five years took a more integrated approach to systemic change necessitating a change in the structure of SUCCEED as well a refinement of its objectives and deliverables. However, the vision of driving curricular reform remained constant.

Co-PI: Roslyn Mickelson

Award: NSF 0208290. Title: "ROLE: Closing the Race Gap in Math and Science Achievement Through Improving Parental Involvement in the Course Selection and Placement Process"(2002-2006) $1,042,677. **Summary:** Project goal is to close the black-white gap in secondary school math and science course enrollments, and by doing so, contribute to closing race gaps in math and science achievement and attainment. The intervention component is a quasi experiment involving three sets of matched high schools (and their feeder middle schools) with diverse student bodies in Charlotte, NC. One school in each pair serves as the treatment site while the other school in the pair serves as the control site. One hundred self-selected parents of academically able students in the three treatment high schools received an enrichment program consisting of: Information about math and science secondary course sequences, hands-on math and science experiences in four gateway courses (Algebra, Geometry, Physics, and Chemistry), parental educational rights, and networking skills. Parents who receive the treatment are expected to ensure that their offspring will enroll in higher track math and science courses. The outcome measure is a Disparity Index [DI]. The DI reflects the racial disparity between the enrollment of blacks and whites in higher level (college prep) courses, controlling for the racial composition of the school. Baseline data enrollment data by race, gender, and track were collected. After Fall 2005 enrollment data are available (estimated January 2006), the three treatment schools' DIs will be compared with the DIs from the three matched control high schools. Two articles are in preparation.

Co-PI: Teresa Dahlberg

Award and Summary: NSF grant ANIR 9980528 (2000), $150,000, "Collaborative Research: Design and Restoration Techniques for Fault Tolerant Wireless Access network." The work addresses admission control, channel allocation, and packet scheduling; development of wireless capacity models and capacity consumption models; and identification of real-time survivability metrics. This work has been extended by NSF-SGER 0101866, $52,000, "Exploratory Research: Interactive Visualization and Control of Mobile Network Simulations" (Dahlberg co-PI) to enhance simulation analysis with an information visualization layer. A collaborative partnership with Linkoping University was also developed for this project, with support from NSF 0125263, $30,000, "U.S.-Sweden Partnership: Fault-Tolerant Network Management." An experimental component was added to this work with support from NSF grant EIA-0130799, $100,000, "Experimental Testbed for Mobile Network Protocols" (2001-2004).

Examples of publications resulting from the support listed here are given in the References section.

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