

Site Visit

University of Michigan NSF ADVANCE Program

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Report of the Review Panel

The site review panel is impressed by the positive effect the Michigan Advance Program has had on the environment for women in science and engineering at the university. Abby Stewart and the ADVANCE team demonstrate the energy, passion, and effectiveness necessary for such a project. We are also impressed that in a time of constrained resources there has been increased hiring of women scientists and engineers in a number of departments, with some hiring women for the first time in many years.

Overall, the NSF site interview team found an institution in the process of change in the direction of its stated goals. We were all inspired. There is enthusiasm among most of those we talked to, and belief that real change has transpired and can be sustained. We commend the University of Michigan for the resources, energy, commitment, and imagination it has already dedicated to this transformation. Members of the panel as well as some of the people we interviewed worry that there needs to be a gradually increasing institutional commitment in the form of resources and advocacy if the transformation is to be sustained after the NSF grant has ended. Achieving this goal requires visible leadership and resource commitment by the top administration, communicated to and recognized by all.

1. Intervention Context

This project involves the departments of science and engineering in the Colleges of Literature, Science, and the Arts (LSA), Engineering, and Medicine at the University of Michigan (UM). Individual members of six smaller science-based programs also have participated in some ADVANCE activities. The conjunction of three deans sends a powerful message: “Everyone realizes we three are behind this, so there will be a price to pay if they don’t get in line,” said one.

Most striking was the high level of enthusiastic support among a significant group of committed faculty members. Nine science and engineering full professors have spent large amounts of their time on STRIDE (committee for Science and Technology Recruiting to Increase Diversity and Excellence), meeting as a group to discuss extensive readings on gender bias and stereotyping and making presentations to colleagues as requested. Indeed, some STRIDE members turned down the significant additional compensation offered by ADVANCE, and the group opted to train a new generation of faculty (dubbed Friends and Allies of Science and Technology Equity and Recruiting, -- FASTER) to help spread the word. We also heard from at least three women that ADVANCE had changed the climate so much, and in concrete ways, that they had decided not to leave the university, a step they were previously seriously considering.

The Dean [of LSA] is an astute and enthusiastic ally. He contributed \$40,000 of LSA funds to fund two additional STRIDE members; requires all search committees to have STRIDE presentations; funded all departments who applied for Department Transformation grants (DTG, discussed below); and was insightful about the challenges in presenting a gender analysis to scientists who “missed out not only on the whole notion of the social construction of reality” but also on having respected colleagues doing gender analysis.

The Dean of Engineering is an effective and active advocate for the ADVANCE project. He heads the Subcommittee on Faculty Recruitment, Retention, and Leadership, which is considering far-reaching changes such as reduced appointments and a new modified duties policy for tenure-track faculty. During this period the College of Engineering (COE) hired 13 new women. We sensed ambivalence among some of the Engineering Faculty interviewed.

The six basic science departments in the Medical School represent a small percentage of the Medical School faculty; for that reason, ADVANCE may not have made as large an impact on the Medical School as a whole. Yet the Dean of the Medical School has an ambitious program of structural changes designed to help women. It appears that junior women have not felt a pervasive impact, although the DTG initiatives have been positively received.

The President and Provost contributed substantial funds in excess of UM’s promised cost sharing: they made a grant of \$200,000/year for four years to support various initiatives, beyond the cost sharing. In addition, at the beginning of the project, the prior Dean of LSA committed half a million dollars to salary base to be used to hire faculty in furtherance of the goals of the ADVANCE project; an additional one-time grant of \$500,000 has been used to create additional DTGs, send women scientists to conferences, and for other purposes. The current Dean of LSA reconfirmed these commitments. The College of Engineering also created a new funding mechanism for faculty to address the kinds of needs funded by DTGs; the specific associated financial contributions are not yet known. The current administration convened a Committee on Gender in Science and Engineering, with subcommittees to examine Faculty Tracks and Work/Family Integration; Recruitment, Retention, and Leadership; and Evaluation and Promotion of Faculty. The ADVANCE grant was sought and awarded during the previous administration. The current President and Provost both articulated firm support for the program, yet the panel members who spoke with them would have hoped for a firmer commitment that the University would pick up the funding and thereby institutionalize many of the ADVANCE functions: for example the \$20,000 stipend for STRIDE members.

2. Intervention Strategy

Main Project Components

The thrust of the intervention is three pronged: a campus climate initiative, a gender equity resource fund, and a departmental transformation initiative.

Campus Climate Initiative

A major survey was begun prior to the ADVANCE grant to determine gender differences in the perception of the University's academic climate. The survey showed that differences occur in four areas: household structure, contract renegotiation, service, and mentoring. These results provided concrete data that confirmed the need for the intervention strategies proposed for the grant.

WTS&E

Women Talking Science and Engineering is a 20-hour seminar that includes readings, discussion of their own work lives, and strategies for success within the confines of being a female faculty member in science and/or engineering departments. In addition, this program offers women professionals the opportunity to meet with women with similar concerns over a longer period of time. It was built upon an existing program Women Talking Work.

STRIDE

The Committee for Science and Technology Recruiting to Improve Diversity and Excellence is a committee of full professors dedicated to gender-equitable recruitment and retention policies. Each member studies a recommended reading list and undergoes three half-days of training in diversity issues. They give workshops for chairs, administrators, and search committees. They contributed to the preparation of a Faculty Recruitment Handbook.

Network of Women Scientists and Engineers

This network was put in place and offered six events within the first year of the grant.

Gender Equity Fund

Elizabeth Crosby Awards, designed for any faculty member whose proposal is aimed at the advancement of women faculty, were instituted and 30 awards have been made at the time of the site visit.

Departmental Transformation Initiative

RFPs were sent to all departments included in the proposal asking them to submit a mini-proposal of how they would attack the goals of the project within their own department. Twelve proposals from fifteen departments were submitted, from which three were funded.

Target Audiences

The target audiences for the climate initiative are the entire University community of scientists and engineers. WTS&E is a support group made up of individual women

faculty members. STRIDE is an informational group whose message is for faculty, department chairs and administrators. The Network of Women Scientists is a networking group designed to support individual women faculty. The Crosby grants also help individual women faculty members. The Departmental Transformational grants help departments examine and solve gender problems within the context of their own department.

Project Leadership and Management

The initiatives and original leadership for all of these strategies began with the project staff. As they were implemented, individual groups took ownership and worked with consultation of the project staff.

3. Changes/Revisions in Strategy

Campus Climate Initiative

The members of the STRIDE committee felt the need to have more people trained in gender-equitable recruiting and retention. A second group participated in the same training and became known as the FASTER committee (Friends and Allies of Science and Technology Equity in Recruiting).

The Center for Research in Learning and Teaching (CRLT) used interactive theater techniques to illustrate behaviors and attitudes that contribute to a negative environment for women faculty. The sketch of a faculty meeting demonstrates unconscious biases when discussing two prospective faculty members, one male and one female.

As a result of the climate survey, a mentoring program was established that included workshops, focus groups, the preparation of a mentoring handbook, and a web site of potential women mentors.

Gender Equity Fund

A need was perceived for a grant program for women on the research track to parallel the Crosby grants for women on the instructional track. The DeWitt grants were instituted with funds provided by the University. These grants are open to all research track faculty. Five have been made at the time of this visit.

Departmental Transformation Initiative

Because twelve groups spent the time to prepare proposals for these grants and only three were funded, the decision was made to give smaller grants to more departments. Partial funding was given to six proposals in the second round.

4. Logic behind project intervention

The PI states four major goals of the ADVANCE program: (1) increasing the numbers of women faculty in the sciences and engineering, (2) retaining those who are already

hired, (3) improving the climate for women scientists, and (4) encouraging women scientists' career development. The underlying logic is that permanent change in the representation of women in science and engineering faculty will depend on the achievement of all four goals. To accomplish both increases in the numbers and enhancement of the support that women faculty feel in their daily work life, the ADVANCE team implemented a multi-level program of intervention that focused on individual assistance to women faculty to enhance their productivity, assistance to departments that wanted to change their recruitment and evaluative practices, and reviews of administrative rules and structures (e.g. tenure policies and work-family assistance programs) that can enhance or impede the success of women scientists. This multiple level process will prevent the piecemeal successes of past initiatives that target individual women but don't promote the institutional change in daily practices or administrative structures that place women scientists in a position to need special assistance. The ADVANCE program has focused significant attention on ways to institutionalize practices that will advance not just women in science, but a climate that is respectful of all faculty with diverse interests and needs.

The UM program contains several features that have enhanced their probability of success. First, they used the results of their initial climate survey to determine where their efforts should be focused. Second, they instituted a data-based approach to changing the "hearts and minds" of faculty and deans in the sciences and engineering to ensure greater buy-in from the central players who would be crucial to the long term sustainability of any institutional plan to increase the hiring and retention of women faculty. The process of educating scientists on the social science literature detailing gender bias in the treatment and evaluation of women was a crucial important first step mentioned by many respondents who talked with the review panel, from Deans down to newly hired junior faculty. This focus on "hard data" appears to have been crucial in bringing a wide variety of faculty and administrators on board with the program's goals.

Finally, several project activities were designed to achieve permanent and synergistic changes. The three subcommittees of the Committee on Gender in Science and Engineering (co-chaired by the President and Provost of the university, and containing several of the deans of the science and technology colleges) are working on *systemic institutional changes* including a flexible tenure clock ranging well beyond the standard time, increased support for on-site child care, extension of the modified duties policy, expansion of the dual-career assistance program, systematic training of search committees and promotion and tenure committees on evaluation biases, development of departmental mentoring programs and cross-department mentoring programs, and mechanisms to ensure salary equity and preempt competitive offers from other institutions. The STRIDE program is working on improving recruitment and retention as well as the organizational climate of individual departments, through presentations to individual departments as well as meetings of administrators, search committees, and faculty interest groups. The DTG grants enable those departments with specific plans for climate improvement to gain financial support for their individual initiatives.

5. Summary of evidence for link between project intervention and institutional change

The processes already in place to support institutional change are impressive. The GSE subcommittees, the STRIDE committee, and the CRLT players all contain active engaged members of the UM community who have expressed their ongoing support for the project. All members of these groups indicated that the ADVANCE grant was crucial in establishing these groups and maintaining their legitimacy over time.

The short term outcomes available thus far indicate mixed success in achieving project goals, although all indicators are moving in the right direction. A summary of the quantitative data on hiring and retention shows slow but significant improvement in hiring within the sciences and engineering overall but persistent problems with the retention of women that have canceled out much of the recruitment success. These processes are being played out within a context of severe budget constraints and reduced state investment in the university. As one dean stated, “Our hiring is up, but we are still losing women.” The quantitative indicators do show an increase in the number of departments moving from “token” representation of women (less than 18% of tenure track faculty) to “minority” representation (18-36%), which may be of significant impact in improving the climate for women in those departments.

The qualitative evidence of climate change is much more impressive than the numbers show, however. Throughout our interviews with program participants we heard stories of transformation. Senior male faculty reported a complete change in their perspective or that of their male colleagues after hearing a presentation from STRIDE or seeing the CRLT players. Junior women faculty reported significant changes in the climate of their individual departments, with comments such as “now certain things can’t happen,” “certain topics can now be discussed in my department that couldn’t be raised before,” and “we are more willing to speak up or call people on issues than before.” Several departments showed a major turnaround in attitudes and practices; the astronomy department was “transformed” according to one respondent, with two new hires of women faculty following the STRIDE intervention and faculty discussion.

Other indicators also show progress. The Provost’s office has hired a research analyst to permanently track the recruitment and retention of women in the science and engineering departments. Faculty are now well aware that a unit on campus exists to help them with issues of gender equity, whether they are department chairs, deans, or individual faculty members. There are new women chairs in departments within LSA as well as the medical school for the first time. LSA will now require STRIDE training for every search committee in the science departments, while discussions are continuing about how to incorporate STRIDE training into each college’s training for new department chairs and administrators. The GSE committee has already (1) accomplished a change in the modified duties policy to include adoption as well as childbirth, (2) institutionalized the collection of data on a salary equity study within the Provost’s office, and (3) begun the discussion of a flexible tenure clock for further consideration by faculty governance structures.

6. Evaluation

The University has strong mechanisms and processes in place to gather and analyze institutional data. Qualitative and quantitative assessments have been crucial in starting new initiatives to advance the goals of ADVANCE, making adjustments to existing practices, reallocating resources, and most importantly, promoting buy-in among the constituents.

Quantitative surveys that cover the number of women in academic and leadership positions do not show much change. Studies of salary, space, and start-up packages are monitored for inequities. There are also cohort studies of promotion and attrition, which indicate that added recruitment of women is often canceled out by their greater attrition. Key indicators such as department sex ratios offer evidence of slow progress being made in two of the colleges since the inception of the program. Quantitative benchmarks that mark the transition of departments from female token to female minority status highlight the slow gains being made.

Although the quantitative studies present a sober picture, they appear to have been used with some effect to improve awareness of the issue as well as to push for changes in a number of practices relating to recruitment and retention of faculty. A number of departments now require search committees and department chairs to attend presentations by the STRIDE committee to ensure that the recruitment policies are more equitable.

These quantitative studies cannot and do not convey the whole picture. The program has, therefore, supplemented these studies with qualitative analysis to study such things as climate and work environment. Surveys follow each event to assess participant reactions. All relevant deans and chairs were interviewed this summer by external experts to gauge the level of support and to measure impact. While the analysis is not complete, preliminary assessment indicates that ADVANCE is well known and attracts high participation.

The success of the program hinges crucially on the quality of the surveys and the manner in which the data are employed for making mid-course adjustments and starting new initiatives. These studies have to be conducted on a continuous basis to ensure that the program is on track to meet its goals and objectives. The need for sampling on a continuous and regular basis, however, has to be tempered by considerations such as the desire to avoid responder fatigue. Michigan is well poised to conduct such evaluations, given the expertise available from the Institute for Social Research.

Finally, the program plans to partner with other ADVANCE institutions in developing data analysis methods for evaluating and assessing the climate on campus.

7. Potential for Sustainability

As with any substantially funded intervention for institutional change, the questions arise, ‘what happens when the money is gone?’ and in the case of the UM grant, ‘what happens if the extremely effective and charismatic current leadership moves on?’ These two questions were at the forefront in all of our interviews and responses varied widely, with evidence for and against sustainability.

With regard to ‘after the money is gone’, interviews suggest variable commitment to institutional sustainability. Comments ranged from the passion of “I will work on the STRIDE committee after funding, and on top of my regular responsibilities” to a shoulder shrug and smile that “I hope we will continue this work” on the part of a very senior staff person.

There is evidence to argue for sustainability, beginning with the astute choice of the University of Michigan for this grant. Michigan is ahead of all other universities in the pool in taking courageous stands and investing resources on behalf of excellence through inclusion. The climate study was already underway before NSF funding was even assured. How can this institution further leverage knowledge from past efforts? For example, what can be learned from the Michigan Mandate about sustaining institutional change? Why did some features of that program endure, and others disappear? How can Michigan build in Advance sustainability based on its own knowledge of how sustainability occurs on this campus? These are all questions that need attention.

There is a complication with this grant. It was awarded to the previous president and provost. How could the new administration demonstrate its commitment to the goals of advance? A good beginning was sponsorship and chairing the CGSE committee. Several interviews suggested the symbolic value of this commitment.

Beyond symbolism, the provost has committed 50% time for a staff member to gather, analyze and communicate the numbers associated with the metrics for hiring, retention, and promotion. This is a critical commitment, and in the eyes of one person we interviewed, signified the will “not to turn back. If we are collecting the data, it will be impossible to ignore problems.” Others were not so optimistic. We did not hear of plans for additional resource allocation, policy adoption, or advocacy at the levels of president and provost. We understand the difficulties of a ‘top-down’ push in a highly decentralized university. Within these understandable constraints, further evidence of commitment at these levels would increase the confidence of the NSF review panel as well as many we interviewed of the sustainability of gains made.

Further evidence of sustainability lies in the design of interventions. Instead of inventing new programs that live in parallel to existing ones, this approach has leveraged local resources (Institute for Research on Women and Gender), informed existing processes (STRIDE introduced into the pre-recruiting process), and infused content into existing programs (women speakers into existing speaker programs – under consideration.). Further, the Institute for Research on Women and Gender was leveraged to administer the grant, host the PIs and staff, and be ‘a place to go to’; the Center for Education of Women was leveraged to conduct interviews for Department Transformation grants, and analyze

numbers; use of CRLT players to develop scripts for subtle dynamics of sexism as they play out in faculty meetings, tenure discussion, and mentoring sessions.

Further arguing for sustainability is the holistic approach of the design which integrated social sciences with science and engineering, bringing together not only ‘numbers and narratives’ but also the integration of distinct approaches to transformational change that could span the entire institution and all its disciplines. This program has moved beyond the ‘either/or’ of many approaches to change. Clearly the programs are alive and evolving. For example, STRIDE has evolved from an educational lecture and then a workbook, to a community building consultative conversation and workshop.

With regard to the second question on our minds, ‘what happens if the current leadership moves on?’ The PI expressed certainty that the effort could go forward without her. In fact, she will be on sabbatical next semester and Pamela Raymond will run the program. Some on the interview team view her certainty as modesty, and hope she will continue in her current role, at least until institutionalization of key programs is assured.

8. Dissemination and Potential for Replication as a Model

This program is unique in significant respects. First, it integrates multiple levels in the design. It has developed analysis, tools, and programs for deans, chairs, and individual faculty; it has gone after the elusive ‘climate change’ through focused development of informal peer support networks and social events; it has integrated the social sciences with science and engineering, with the social sciences informing the design of intervention strategies, as well as the consulting and community building approaches. The program identifies and leverages indigenous wisdom and passions rather than relying on expert models that arouse defensive responses and work against sustainability.

The PI and this panel believe that process is key to what works about this program, and that this process can be replicated. ADVANCE at Michigan is characterized by a collaborative approach between PIs and interested faculty and administrators, leveraging previous learning and existing programs and personnel. It has proceeded on the premise that most people are of good will, and if educated about injustice and poor performance, will address them. Many of those interviewed described conversion experiences from the Valian book, through discussion among themselves on the STRIDE team, or as targets of a CRLT performance.

We believe the product cannot be directly replicated, as it needs to arise of an institution’s specific set of capabilities, consciousness, and passions. The collaborative, multi-disciplinary process discussed above, and the multi-level approach to change could be incorporated in other institution-specific plans. There is a danger that as tools (CRLT script, STRIDE program, etc.) are adopted, institutions leveraging the Michigan approach will not understand the systemic way that tools are embedded, and try to adopt a piecemeal approach. Tools alone will have little sustainable impact.

Staff works hard to disseminate the discoveries and innovations of this program. The PI consults with other PIs on a regular basis; and in addition, has ensured that the program is featured in *Science* and *Nature* as well as in the local press.

9. Recommendations

NSF:

Complex sustainable change takes a long time. Five years is not enough. We recommend that a renewal possibility, perhaps at lesser funding, be considered. We have learned how important the NSF name is to the credibility of this effort, and we fear that 5 years of NSF sponsorship will not be enough to create permanent change. We also heard concern that “it would be a terrible signal” if NSF, having created ADVANCE, were to eliminate the Program.

University of Michigan:

The university has been an active participant in the Advance project, and has contributed more financially than initially envisioned in the grant proposal. In order to institutionalize the capacity for analysis and intervention that is at the heart of this

program, we recommend that the University of Michigan gradually increase its commitment to the ADVANCE program as NSF funding is phased out. We specifically recommend both structural and process changes, all taken from the results obtained so far.

1. Continue to have a person with an institutional title (e.g. Counselor to the Provost) but not part of the authority structure to run an office of science and engineering. Such an office might be called something like a Center for Excellence in Science and Engineering. Such an office could be housed at the Institute for Gender and Women and could continue to be occupied by Abby Stewart if she were willing. We have learned that she is credible and trusted – “incredible” by several accounts – and would be in a strong position to carry on this effort once NSF is no longer involved. Such an office could provide help for departments in the self-study of their climate, help with the continuous training and learning for all aspects of recruiting, promotion, and retention, and be a resource to other programs.
2. Incorporate ADVANCE procedures into ongoing structures. For example, absorb the ‘women speaker series’ into traditional speaker series or annual internal lectures, to ensure that the traditional programs and the resources committed to them include women.
3. Commit to ongoing financial support to continue the critical elements of the ADVANCE process: STRIDE and FASTER (including compensation for STRIDE members); CLRT; women’s network and career development activities; mentoring; Crosby and DeWitt grants.
4. Continue the collection and analysis of the data that ADVANCE has initiated.
5. Ensure that all search committees, including those for chairs and deans, have STRIDE training and receive existing gender materials before starting their deliberations.
6. Support the STRIDE team to move ahead with its intention to institute rotational membership both to avoid burn-out as well as to ensure expanding the pool of educated faculty. Ensure that at all times at least one of the original and passionate members remains for continuity and mission.
7. Create incentives for Deans and through them for chairs to make progress on the hiring, promotion, and retention of women in science and engineering, with special attention to women of color.
8. Create opportunities for departments that are making progress to meet with other departments for mutual benefit.
9. Consider systematic exit interviews of women in science and engineering to understand reasons for leaving.
10. Finally, in order to understand the reaction of men and women in departments with token, minority, or ‘equal’ numbers of women, we hope that the final climate survey could include a sample of men in the social sciences.

Outreach:

1. Systematically identify “channels of distribution” for the practices, programs, and results of all the ADVANCE projects, including journals, conferences, and professional networking events. The Academic Leadership Program of the

CIC, as well as the ACE and AAU would benefit from hearing from the PI's. We believe such external visibility would not only help scale the program beyond Michigan, but also aid sustainability at Michigan as external visibility of the program and its leadership can establish Michigan as a leader in this area.

2. Include other universities at PI meetings to spread the word. PIs could invite colleagues with whom they already have a relationship – perhaps from neighboring institutions – thus leveraging existing relationships to ensure the growth of the community of institutions committed to transformation.
3. Consider ways to disseminate CLRT. Three possibilities were discussed: to bring people from other universities to Michigan for training; to prepare and disseminate 2 discs – one with the script, one with facilitator training; or to do both approaches.