



Getting to the Heart of it All

Connecting Gender Research, WIE Programs, Faculty & Corporate Partners

2012 Conference | June 25-27, 2012 | Columbus, Ohio



2012 WEPAN National Conference

**Getting to the Heart of it All:
Connecting Gender Research, WIE Programs,
Faculty & Corporate Partners**

June 25-27, 2012

Columbus, Ohio

New Ideas from the ADVANCE Community: Using a Dialogical Change Process and Strategic Planning to Diversify Academic Departments

Jim Nolan, J. Kasi Jackson, Melissa Latimer, Leslie Tower, Awilda Borres*
West Virginia University / Ventura LTD*

Abstract

The described intervention engages academic departments in a dialogical change process that promotes collective engagement in institutional transformation and the achievement of gender-equity and diversity goals. It links departmental and university strategic planning to attain “purposeful development of a workplace/organizational climate” to “encourage people to contribute to success and retention”. We introduced, facilitated, and assessed a dialogical process for organizational change in university departments. The dialogical process promotes the development of interdependence and collective efficacy in a new population where change has been documented as slow and labor intensive – the academy. Our objective is to positively impact department climate to enhance the retention of women faculty. Departmental climate, particularly interactions with colleagues, remains an area wherein women continue to feel excluded. To get faculty buy-in, we linked the process to the university-wide strategic planning process. We will eventually target sixteen STEM departments at a rate of four per year; this panel will present preliminary results from the first two departments. In addition, we developed a consensus measure to compare climate survey results across departments. The University’s Vision 2020 contains 19 strategic action steps, three of which relate to diversity; these became the starting point. Prior to the first departmental meetings, we asked faculty members, via an e-survey, to select one of the three diversity- related action steps and two of the remaining 16 most relevant to their departmental strategic planning. At our first meeting the faculty reached consensus on three actions steps to focus on for the remainder of the semester. The remaining three to four meetings were comprised of activities to generate ideas and compile them into a strategic planning document with goals, actions, strategies, targets, leadership and dates. Working in collaboration with the Provost’s Office, the Office of Strategic Planning and the Arts & Sciences and Engineering Deans’ Offices, the team an accountability structure, which includes funding for departments to implement aspects of their plans.

The Situational Approach to Institutional Transformation

According to Sturm (2006), the ADVANCE project achieves inclusive climates through institutional citizenship, organizational catalysts, and institutional intermediaries. Perceptions of climate are important determinants of women scientists’ overall job satisfaction (Settles et al., 2006; Wachs and Nemiro, 2007). Unfortunately, departmental climate, particularly interactions with colleagues, remains an area where women feel excluded (Committee on Gender Differences, CWSEM and NRC, 2009). Departmental interactions influence women's job satisfaction and intention to quit. Callister (2006) found that the relationship between women faculty's greater dissatisfaction and higher intentions to quit was mediated by departmental climate, indicating women faculty place a high value on positive relationships and interactions with colleagues. Etzkowitz, Kemelgor and Uzzi (2000) found that women were more successful

in “Relational Departments with a collegial and cooperative atmosphere that provide the safety to take the risks necessary for innovative work and the collaborations necessary for networking” (pg. 181). At a meeting of ADVANCE PIs, attendees identified the department as a key area for interventions (June, 2009). There is a critical need to develop strategies that can facilitate energy for change and promote respectful relationships among immediate colleagues, while providing an avenue for institution-wide impact. *Our project is significant because it develops an approach to enable change agents to identify a group’s readiness for transformation, facilitates group goal development, and provides a mechanism for implementing responsive institutional level policies.* Similar to other ADVANCE programs (Utah State University, the University of Rhode Island, Iowa State University, the University of Washington) our approach is a *departmental level program* to promote faculty engagement.

We draw from both private sector experiences and social science research to develop what we are calling a “situational” approach to institutional transformation. The term “situational” refers to both the thing we are trying to change—i.e., the situation in which STEM faculty work, and the flexibility needed to tailor strategies to a variety of working “situations.” Organizational transformation in the private sector utilizes “change agents”—individuals who are recognized as informal leaders in the targets of change. Generally, trained consultants work with change agents to provide them with tools and knowledge to push for change from the inside. The consultants also work outside of the targeted departments so as to leverage resources from various locations in the larger organizations to support the work of the change agents.

From early social psychologists, we apply a field theoretical perspective and consider two important aspects of institutional transformation: the status quo and the social atmosphere. The status quo refers to social habits that are the result of forces in and on the organization and the sub-units within the organization. Lewin (1947) found that status quo was a quasi stationary (*Poisson*) process, meaning that only small variations in the behavior of individuals and groups will be observed without some major intervention in the social field. Lewin’s field theory has been widely used as a conceptual framework for thinking about organizational and social change. Organizations change through a process involving three interconnected and sequential stages: 1) Unfreezing, 2) Movement, and 3) Refreezing. The term “unfreezing” refers to a process where members of an organization are presented with information or experiences, either formally or informally, that melt away old ways of thinking and/or old identities. Once an organization or sub-part of an organization experiences “unfreezing”, it must find a new sense of reality or purpose and begin *moving* toward that end. Finally, once an organization finds a new identity or purpose, it must find ways to solidify or *refreeze* the activities of its members toward these ends.

From social psychology we apply a *social interdependence* theoretical framework (Deutsch, 1949; Johnson, 2003). Social interdependence theory holds that the ways in which group and organizational goals are structured determines interaction patterns and outcomes. In other words, when organizational goals require the cooperation of group members—not competition—members are more likely to help each other, share resources, and develop trusting interpersonal relationships (Deutsch, 1961). Along with social interdependence theory, we include a concept within sociology and social psychology known as “collective efficacy.” Collective efficacy is a characteristic of the group-as-a-whole. Albert Bandura defined collective efficacy as “a group’s shared belief in their conjoint capabilities to organize and execute the courses of action required to produce the levels of attainments (Bandura, 1997:476).

We believe that a single change strategy applied to all units in an organization will not work well. Instead we propose that strategies for department transformation be developed at the local department level based on the department “type.” In a *Type 1* department environment, members are ready for a change and believe they can do it well. In field theory terms this is a time for “*movement*” to a new level of participation. This Change can be achieved by developing a strategic plan relating to diversity, with a special focus on recruiting and retaining female faculty members, and developing a coordinated action strategy. In a *Type 2* department situation, the social atmosphere is not supportive and department members do not see the need for change. In this environment, there may be a lack of diversity and an absence of discussion around issues to inclusion. Thus, creating structured time for a dialogue with faculty and department leadership is a way to *unfreeze* hardened attitudes and behaviors relating to diversity. In *Type 3* departments, an supportive climate for female faculty members may be present. However, this be an inherited situation; faculty may not have dealt collectively with a change process involving diversity. Moreover, they may believe the “authorities” are responsible for supporting diversity. In this type of department, the leadership may want to take on a different issue or a different form of diversity to address with collective action. This new activity should also begin with an *unfreezing* of traditional beliefs and assumptions. Finally, in *Type 4* departments, members have worked together to create a social atmosphere that supports and encourages women faculty members. In order to foster a long-term commitment to women faculty members, changes in policy and procedures may serve to *refreeze* beliefs and assumptions that create the desired behaviors.

This paper provides the results from our pilot implementation of this process in two departments (one a social science/natural science department and one in engineering) at a large public institution.

Measuring the Impact of the Change Process

We used a survey to measure the impact of the change process. The survey was administered at the meeting where faculty members were oriented to the departmental work process and on-line three weeks after the departmental work meetings had concluded. The survey includes seven scales: Climate, Psycho Emotional, Optimism, Affective State, Vicarious Experience, and Collective Efficacy. For the climate subscale, a literature review identified several existing scales for measuring climate (e.g., Nesbit et al., 2003; Wright et al., 2003). The scale designed by Jacobs, Bergen, & Korn (2000) was selected because of its fit with the institutional stakeholders’ concerns and its psychometric properties (e.g., $\alpha = .94$). Selected dimensions of the other instruments were incorporated to strengthen the scale, including the designing of a *new* subscale (with additional discrimination items). There was concern that men would not respond to the survey if it focused entirely on women. Therefore, revisions were made to neutralize gendered language. The revised scale was found to have good content validity and reliability (i.e., internal consistency). The revised scale has 41 items and six subscales: Positive Climate (ten items); Cohesion (six items); Sexual Harassment (six items); Gender Discrimination (six items); Gender Insensitivity (eight items), and Additional Discrimination (five items). We developed five additional scales to measure constructs theorized to be associated with departmental change (Table 1). We piloted the data on a department not participating in the ADVANCE departmental work. Cronbach Alpha’s and Factor Analysis were run. Because the

alphas for the Psycho Emotional scale came back low, we revised the items by simplifying the language. The other alphas came back in the acceptable range or higher. We ran Cronbach alpha's with the data from the first two departments. Please see Table 1. Based on the low alpha of the Dependence subscale, we further revised the items. Survey results are currently under analysis.

Table 1: Cronbach alpha's for scales and subscales for the first two departments.

1. Psycho Emotional	
Dependence	$\alpha = .43$
Conflict	$\alpha = .70$
Interdependence	$\alpha = .72$
2. Optimism	$\alpha = .81^*$
3. Affective State	$\alpha = .60$
4. Vicarious Experience	$\alpha = .92$
5. Collective Efficacy	$\alpha = .94$

*The original alpha, before removing an item, was $\alpha = .74$.

In addition to the survey, participants provided input by writing minute papers on what worked and what needed to be improved at the end of each session. We also had a general feedback session at the end of the work. The facilitators also did “data dumps” where we recorded our impressions after each session. Our external evaluators are also soliciting faculty input and meeting with key administrators. The minute papers, data dumps and comments from the general feedback session provide the evaluative material in the section that follows.

The Dialogical Change Process

The process was designed to be *flexible so that it could be implemented in departments with a variety of structures and time commitments for faculty meetings*. It includes a 1-hour introductory meeting with the provost as our administrative advocate, and seven to eight hours of meeting time for the actual process. We allow the departments to decide how to allot those meetings (e.g. four 2-hour meetings, seven 1-hour meetings, and so on). Having the support of upper administration had a positive impact, although the provost's presence did not prevent some department faculty members from sharing their skepticism. Additionally, we had to address faculty concerns that we were there to enforce the desires of the administration, regardless of the direction that the department wanted to take. In this regard, the role of *neutral change facilitators* advocated by our external consultant and coach was helpful, as was her advice to ask the departments to identify *what was in their scope and what was outside it and to focus on things they could control*.

Before beginning, we worried that science and engineering faculty would see the process as ‘touchy-feely’ and would feel that it was a ‘waste of their time’ if it did not translate into concrete outputs. To address this, we made the decision to link the department work to the development of the university strategic plan. This meant that our work shifted from a process designed to envision the ideal, to one in which the outcome parameters were at least partially set

by the university strategic plan. We encountered some resistance to this in both of the pilot departments. In a survey prior to our first working meeting, we asked the faculty members to select three action items from the University's list to focus on in the work. Neither department felt that the university level action items adequately fit their department – one group asked to develop their own and the other proposed modifications. *Our willingness to quickly shift gears and allow the faculty this option, contributed significantly to their buy-in and was a significant turning point* – instead of seeing us as outsiders imposing a view on their departments, they began to see us as facilitators working to help them develop their own vision. We also emphasized that we were not organizational change or strategic planning experts (though we were being coached by one), but that we were working to develop and refine a process useful for academic units, and we asked for input to help refine the process for future iterations. *By coming into the meetings as peers, rather than experts, we hoped to engage faculty as partner participants and to communicate our respect for their input.*

Instead of being the target of the discussion, *diversity and inclusivity were integrated into the discussion.* This strategy confused some faculty members who felt that we were drifting off-mission because we were not guiding a discussion focused on women's issues but instead were focused on strategic planning. Our strategy is in line with the institutional transformation mission of the NSF ADVANCE program, which recognizes the embeddedness of issues facing women within a larger institutional context. We also justified this choice to the departments by referring to research showing that overall departmental climate as a key factor affecting the success of women faculty. We developed the argument that many programs that benefitted women would be of broad benefit for all faculty (e.g. mentoring for junior faculty). Overall, we wanted to demonstrate that all would benefit from the work and we also wanted to avoid putting women and minority faculty members in an uncomfortable situation where they might become the sole target of a discussion due to their low numbers in a given department. Overall, this is a delicate balancing act that we aim to refine in the future

The exercises provided a *balance between individual input and group discussion.* The process emphasizes the written collection of individual reflections with review by all, so that they could all see input from the entire group, including those uncomfortable speaking at meetings. We held the specific topics of discussion as confidential, and *advised faculty members that our research was concerned with the process, not with their specific issues,* which might include information that they would not wish to share with those outside their departments. Specific activities of the dialogical change process were customized in consultation with the external consultant and coach. We also found the *Living Dialogue: Innovating and Changing Through Liberating Structures* workbook (Composed by Henri Lipmanowicz, Plexus Institute, henri.lipmanowicz@verizon.net & Keith McCandless, Social Invention Group, keithmccandless@earthlink.net) to be a useful source. The strategic plan template had been used previously by one of the college deans. Thus, rather than representing unique tools; *the process described below is an assemblage and modification of pre-existing tools to meet our institutional context and the needs of our project.*

Step 1: Identification of the three actions

Prior to their first meeting, faculty members from the departments received a survey with the actions from the university's strategic plan listed. From these they selected three items -

including one from the group closest to ADVANCE aims. These would form the basis for the remaining work.

Step 2: The ideal department

Next we asked the faculty to develop the characteristics of their ideal department. We also asked them to identify trade-offs. What might individual faculty members gain and give up in the ideal department? The first department's ideal focused on the environment in which they worked – they wanted an environment that promoted a sense of joy around intellectual and scholarly engagement with colleagues. The second department emphasized workflow and ensuring that tasks were fairly divided and that the administrative structures allowed for success. This was one place where *faculty were allowed and encouraged to envision possible futures, instead of being task focused*. Some of the feedback indicated that they appreciated the time and would have liked to have more time to have a general discussion along these lines. Although we attempted to link later exercises back to the ideal department, this area of our process requires more thought to obtain better integration.

Step 3: Stop-Start-Continue

Faculty completed one Stop-Start-Continue table for each of the three. They listed items the department needed to implement to achieve the action, items they should continue doing, and items they needed to stop doing. They could also ask for assistance or resources from ADVANCE. The faculty then transferred their brainstorming to post it notes (green – start, yellow – continue, red – stop, blue – ADVANCE) and attached the post it notes to one of three sheets coded for each action. We also added a fourth sheet called the 'parking lot'. This area was for things of concern that didn't fit under the actions or that were outside of the department's control. In future rounds of the process we would like to develop a mechanism whereby information in the areas could feed outward from the departments to the entities in control of these areas. After the post-its were attached, we asked the faculty to do some processing by reading the sheets and sorting the items (e.g. putting similar ones together). The groups shared their work. We integrated a check back to the ideal by asking faculty to calibrate their brainstorming with the ideal list and to see if they needed to add anything. Finally, we gave faculty stickers with prices on them (e.g. 10 cents, 25 cents, 1 dollar, 5 dollars, and so on). We asked them to 'spend' their money by placing the stickers on the items based on how much they valued them.

Both departments emphasized providing mentoring and administrative support for faculty, especially junior faculty. There was also attention to how to develop a collegial atmosphere that would enhance scholarly production. Departments also identified structural and administrative factors that impeded their research production.

Step 4: Open space and the marketplace

For the next session, we gave faculty members the opportunity to sort into groups to work on the action in which they were the most interested. These groups were tasked with organizing the information from the Stop-Start-Continue table into the template for the strategic plan. After the first session, they shared their drafts with their colleagues. Faculty provided verbal and written feedback to each group. The ADVANCE team typed up these drafts and distributed them

to the faculty prior to the next meeting. At the next meeting, the groups revised their plans and then shared the final product with the facilitators and the ADVANCE Center Director, who provided feedback. The faculty then assigned leaders for the remaining revisions. Drafts were sent to the ADVANCE Director for review, which the chairs used to produce the final products, which will go to the Provost's Office and the respective college deans for review. The ADVANCE Center has some oversight over the goals related to ADVANCE aims, which are achieved in part through the administration of the funding from ADVANCE and the provost's office to departments to implement specific aims of the plans. It is anticipated that reviewing these plans will become part of the annual review process for department chairs.

An area that we have identified for future attention is *how to best integrate the development of the final plans with departmental decision making processes*. This is especially key in departments where some faculty systematically did not attend the sessions. We saw significant variation between the departments in this regard. In one group, a core group of dedicated faculty (approximately half of the total listed group) attended all of the sessions, with the remainder attending one or two. The core group expressed concerns about the lack of attendance by some of their colleagues. The second department had a very high attendance rate, only one member could not attend regularly due to teaching commitments. The second department was significantly smaller and seemed to have already had an established tradition of regular faculty meetings. The first department was larger and generally had had most meetings among subgroups of faculty in specific disciplines, instead of with the whole faculty present.

Leadership and Accountability

Progress for women in STEM depends on male and female engagement from faculty and administrators. Developing trust and open communication is particularly important in addressing gender-based discrimination where advances for women might be perceived as a threat to men's status. According to Child (2005), people resist change when it threatens their interests and change often fails because people do not clearly communicate among themselves the type of desired change. Kalev, Dobbin, and Kelly (2006) found that organizational level change which involved establishing responsibility and administrative structures were most effective at meeting affirmative action goals and promoting diversity; these structures enhanced the effectiveness of other programming such as mentoring and training on gender bias in evaluations. Further, change efforts function most effectively through "[...] networks of people, not through the actions of one individual, and through the alteration of ongoing operations, rather than the introduction of different actors playing the same roles (Guinier and Minow, 2007:269)." Thus, there is a critical need for effective mechanisms to assess where groups are in their engagement with diversity issues, apply the appropriate tools and motivation to help them move forward, and effectively connect department level processes with those at the administrative level. The following section of the paper focuses on ways to maintain the higher levels of interdependence, collective efficacy, and collegiality introduced by the aforementioned department level work. We discuss four key elements in "re-freezing" the new positive patterns below.

1. Administrative Awareness and Public Support for the ADVANCE work

This work must begin early in the time-line and be maintained throughout the entire process. During the *proposal writing period* we had lengthy discussions with the Deans of the targeted colleges. These meetings were facilitated by a well-respected male STEM faculty member with the title of Associate Dean for Research. We also had conversations with our University President about the proposed work and the institutional commitment to sustain the work at the end of the grant award. The original members of the STEM Implementation Team were contacted, informed about the work, and asked to write letters of support for the proposal. In sum, we engaged early and thoroughly with all top level administrators.

For the *award period*, the President announced the NSF ADVANCE award in his first presidential state of the University address. He indicated that this award was integral to University moving up to the highest Carnegie classification. The President and Provost's websites as well as the targeted college's websites have very visible links to the ADVANCE site. Both the President and Provost are highlighted on the ADVANCE website in ways that reflect their strong endorsement of the project.

In the *pre-meetings with Chairs of the first four targeted departments*, their respective Deans elaborated on the importance of the ADVANCE work and their personal commitment to its success. We also held *individual pre-meetings with the faculty of the first four departments*. For these meetings, their respective Deans (for the first two departments) and Provost (for all four departments) attended this meeting and spoke about their connection to/support for the ADVANCE work.

We also assembled an Internal Advisory Board with representatives from ADVANCE personnel, administrators from both targeted colleges, and women faculty in the STEM fields. The Internal Advisory Board is chaired by the Provost and meets every other month to review project outcomes and to advise on the development of programming and policies responsive to the needs of faculty. We created a *STEM Implementation Team representing key administrators and highly respected male professors from the university STEM community who serve as organizational catalysts for the project.* Their job is to facilitate buy-in and enhance ADVANCE's disciplinary credibility with faculty in science and engineering. This committee is co-chaired by the Associate Deans from the targeted colleges. The remaining committee members are endowed professors or distinguished professors from the 16 departments. In addition to encouraging the full participation of their own faculty, the Implementation Team works with the facilitators and the Director of the ADVANCE Center to encourage participation in the remaining 12 STEM departments in subsequent years of the grant. Again, the ADVANCE work group made a public presentation to this group which was introduced and facilitated by the Provost.

The final piece is *integrating center personnel into faculty development and/or other significant University events.* The ADVANCE Director was asked by the Provost's office to facilitate a three-hour training for all department Chairs/leaders. She has also served as a co-presenter at Faculty Development Sessions focusing on family friendly policies and lunches with new chairs. The ADVANCE Center was asked to administer the Sponsorship program, a new external mentoring program for the University community modeled after the ADVANCE Sponsorship program.

2. Accountability

Each of the above items creates multiple levels of accountability with individual faculty, Chairs, Deans, the Provost, and the President. In addition, we maintain regular contact with the university leadership. The primary goal remains to integrate ADVANCE work into the overall mission of the University. For example, during her March 14th remarks to the Faculty Senate, the Provost indicated a significant role for ADVANCE in the hiring process of 25 new faculty members in the next year, most of who were in STEM departments. The ADVANCE team was asked by the Provost to provide research-based information on (1) unconscious bias and its potential effect in faculty searches and (2) best search practices geared particularly towards recruitment of women and underrepresented faculty. Any department receiving a new line must participate in the improving faculty searches training provided by ADVANCE.

Each of the departments were expected to use the training materials to design a department specific action plan for improving their search process. They then emailed this plan to the ADVANCE Center Director for approval. The Director then worked with the Deans/Associate Deans of the targeted Colleges to provide appropriate feedback on the plan and determine when it received approval.

In addition, *members of the ADVANCE team worked collaboratively with the Office of Strategic Planning to develop a model strategic planning template and an accountability reporting structure for these documents.* These documents are used in the department-level work and will be the model recommended for use for all departments.

3. Acknowledgement/Praise for Work

The ADVANCE team publicly praises the departments for the completed work every chance we get. The ADVANCE Director attended the presentations, asked questions, and provided positive comments on the work. The ADVANCE Director sent letters to both departments acknowledging that they had “set the bar very high” for the remaining departments. We have asked permission to use their outstanding departmental work as samples for others to see. We have asked in the presence of other members of the university community for them to share their perceptions of the ADVANCE departmental work. All of these efforts create positive public attention for the departmental accomplishments.

4. Aid/Support to move Work Forward

The ADVANCE team budgeted \$3,000 for each of the sixteen departments (to be paid at the completion of the departmental work) to aid in moving their diversity work forward. We worked diligently with the Provost’s office to get a “supplemental budget” (\$357,000 over a four year period) approved that would expand the goals of ADVANCE but utilize University funds to support the work. Thus, there is an additional \$7,000 each for up to four units per year that demonstrate measurable success in achieving their diversity and faculty development aims. We know the goals of their strategic plans and try to find ways to assist them in moving forward on these plans by advocating when possible for additional resources for the departments from deans and other administrators.

Conclusions: Overall Impressions

The faculty members expressed surprise at how useful and enjoyable the process had been. They appreciated how the facilitators kept things moving forward, but they found some

tasks constraining. Faculty suggested allowing future departments more freedom to identify and work with multiple action items. They had felt confused about specific steps during the process (as we expected) and they asked if we could provide more clarification about the final aims. Our coach had warned us that participants would be unclear about the overall purpose and goals until they were well under way, so this may be a natural aspect of the nature of the work.

What You Should Know to Develop Change Agents in Your Academic Institution

Given that the role of change agent is still fairly new to academia, developing guiding principles with leadership and with individual assuming change agent roles is critical to success. Guiding principles are important to serve a reference at the start and during implementation as change agents develop. Change agent development take effort and commitment from leadership and it is critical to establish wins within departments and those assuming the change agent role.

Agent Selection: Change agents must be credible, recognized as informal leaders in their department and from impacted departments. Any process should be built to ensure the role is integral to the project, delivers high value, and promotes visibility.

Agent Role Clarity: Agents are deployed to support the program or initiative change underway, but it is important that the agent's role and relationship with local leaders be clearly defined. Agents act in service of local leaders but can be their substitute. Clearly communicate the agent role in assessing change progress and their "neutral" status. They will counsel local leaders on what they are observing about progress. "Don't shoot the messenger" is an important mantra. In addition, change agent's percentage of time must be clearly negotiated given teaching and research responsibilities.

Commitment to Development: Find a balance between the work of the change effort and on-going development of agents in their roles. In particular, build time at the start of the project for formal skill building and coaching. If possible, include change agents in development of process activities which they will be directly responsible to facilitate or implement.

Tools and Resources: Develop common tools and dedicated resources to manage and support change agent development/coaching. Once implementation has commenced, build in regular times for coaching to process new learning.

Issue Resolution: Define a clear criterion for decision making, and resolution of issues among change agents. Choose a coach that is skilled in educating change agents in creative problem-solving and self-awareness.

Knowledge Transfer to Departments: Depending on the scope of the effort underway, the role can become larger than is manageable by initial change agents. Do not become so dependent on change agents to the point that the role is not manageable or they experience change fatigue. Develop plans early in the process to transfer knowledge to academic departments and implement while the change agent role is manageable and change agent engagement is high.

Acknowledgements

Partial support for this work was provided by the National Science Foundation's ADVANCE IT Program under Award HRD-1007978. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

References

Bandura, A. (1997) *Self-efficacy: The Exercise of Control*. New York: W.E. Freeman and Company.

Callister, R. R. (2006). "The Impact of Gender and Department Climate on Job Satisfaction and Intentions to Quit for Faculty in Science and Engineering Fields." *Journal of Technology Transfer*, 31. 367–375.

Child, J. (2005). "Effecting Organizational Change." Pp. 277-308 in *Organization: Contemporary Principles and Practice*. Hoboken, NJ: Wiley-Blackwell.

Committee on Gender Differences in the Careers of Science, Engineering, and Mathematics Faculty; Committee on Women in Science, Engineering, and Medicine (CWSEM); National Research Council (NRC). (2009). *Gender Differences at Critical Transitions in the Careers of Science, Engineering and Mathematics Faculty (Free Executive Summary)*. Washington, D.C.: National Academies Press. Retrieved from http://books.nap.edu/catalog.php?record_id=12062 on November 4, 2009.

Deutsch, M. (1949). "A Theory of Cooperation and Competition". *Human Relations*, 2, 129-152.

Etzkowitz, H., Kemelgor, C., and Uzzi, B. (2000). *Athena Unbound: The Advancement of Women in Science and Technology*. Cambridge, UK: Cambridge University Press.

Guinier, Lani and Minow, Martha. (2007). "Dynamism, Not Just Diversity." *Harvard Journal of Law and Gender*, 30. 269-277.

Jacobs, C. D., Bergen, M. R., & Korn, D. (2000). "Impact of a Program to Diminish Gender Insensitivity and Sexual Harassment at a Medical School". *Academic Medicine*, 75, 464-469.

Johnson, D. W. (2003). "Social Interdependence: Interrelationships Among Theory, Research, and Practice". *American Psychologist*, 58(11), 934-945. doi: [10.1037/0003-066X.58.11.934](https://doi.org/10.1037/0003-066X.58.11.934)

June, A. W. (November 1, 2009). "Meeting Notes Progress for Women in Academic Science, but More Work to Do." *The Chronicle of Higher Education*. Retrieved from <http://chronicle.com/article/Meeting-Notes-Progress-for/49017/?key=TG51IFg5ZiAfYYSVjK3QWcnNQOHV7JUJ%2FbHRBZSAaYlpT> on November 4, 2009.

Kalev, A., Dobbin, F., and Kelly, E. (2006). "Best Practices or Best Guesses: Assessing the Efficacy of Corporate Affirmative Action and Diversity Practices." *American Sociological Review*, 71. 589-617.

Lewin, K. (1947). *Frontiers in Group Dynamics: I. Concept, Method and Reality in Social Science; Social Equilibria and Social Change.* Human Relations.

Nesbit, P. E., Inglehart, M. R., Habil, P., Sinkford, J. C. (2003). Work Environment Perceptions of Full-time Dental Educators: Does Gender Matter? *Journal of Dental Education*, 67, 916-924.

Settles, I., Cortina, L. M., Malley, J., and Stewart, A. J. (2006). "The Climate for Women in Academic Science: The Good, the Bad, and the Changeable." *Psychology of Women Quarterly*, 30. 47-58.

Sturm, S. (2006). "The Architecture of Inclusion: Advancing Workplace Equity in Higher Education." *Harvard Journal of Law & Gender*, 29. 247-334.

Wachs, F. L. and Nemiro, J. (2007). "Speaking Out on Gender: Reflections on Women's Advancement in the STEM Disciplines." *Journal of Women and Minorities in Science and Engineering*, 13. 77-94.

Wright, A. L., Schwindt, L. A., Brassford, T. L., Reyna, V. F., Shisslak, C. M., St. Germain, P. A., and Reed, K. L. (2003). Gender Difference in Academic Advancement. *Academic Medicine*, 78, 500-508.