A Statewide Policy Driven Approach to Gender Equity

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Abstract

This paper presents current successes and challenges of an NSF Advance-PLAN project designed to address gender equity through policy change on a statewide level. The project is based on the model of change that identifies effective change as a top-down policy driven approach through a central authority, in this case, a statewide board of regents that oversees all public universities. The model for top-down change is particularly suited to a small, rural state where a) n-values for gender related statistics at any institution may not be statistically significant b) institutional relations allow for cross-state cooperation and c) size of the institutions allows for timely implementation and assessment of policies. In addition, intercollegiate cooperation allows for provosts of all six institutions to serve as an advisory panel for the project.

The paper will discuss the progress made by the project   in terms of priorities including data acquisition and policy initiatives as well as challenges. Data have and are being collected and assessed in areas of salary, hiring, faculty annual reviews and retention. These areas were identified in review of past ADVANCE findings as key areas of implicit and explicit bias. Initial data analyses indicate that the state system follows trends identified in the literature including lower salary, differences in language used in annual reviews, and disparities in hiring and promotion. Challenges to the project include high administrative and project team turnover rates, difficulties in obtaining necessary data, and a state legislature that is chilly to issues of equity and diversity.

Introduction

Systemic policy change is needed across the state's institutions of higher learning in order to pursue gender equity for faculty in the science, technology, engineering, and mathematics (STEM) disciplines. Influenced in part by the rurality of our institutions, women account for only 32% of the STEM faculty in the six-university South Dakota Board of Regents (SD BOR) system, and only 29% of the faculty in STEM disciplines outside of the social and behavioral sciences. These numbers are even lower for engineering and fall below national averages reported by ASEE [27]. The need to establish policies that create a climate to more effectively recruit, support, and retain women in STEM has been largely unmet across state institutions.

One element of change has proven the most recalcitrant across past programs: the urgent need to effectively and demonstrably change the institutional academic climate for women in the STEM sciences [1], [2]. One reason for the lack of long-term success in sustained institutional change for gender equity is due to the fact that, "Gender equity should be seen as a systemic rather than an individual issue" [3]. In order to address equity in higher education across a state system, we have employed a "top-down" approach that goes beyond individual institutional administration and starts at the state level. We use the "top-down" terminology to indicate that, although this proposed work builds directly upon past ADVANCE successes, our emphasis is in breadth of change through work with a central authority, rather than individual institutional initiatives or

"bottom-up" approaches that predominate in past ADVANCE work. Past research studies (e.g. [4] [5] [6] & [7]) indicate that the central establishment of equity policy and indicators at the system level is required, not only to demonstrate improvement in diversity but to actualize it. Therefore, the rationale for our approach is that, because current policies may not adequately serve women faculty in STEM in our state, we need to engage top administration not only in institutions but also at the state system level in order to develop and implement effective policy. The focus on women faculty here reflects a majority cis-gender research population, as the system has even lower levels of representation of women faculty of color and fewer LGBTQ+ faculty members than national averages. Although the conceptual emphasis is a limitation in the research, the specific policies forwarded are intended to help all faculty succeed in this system. Assessment of our success will include specific reference to race and citizenship, although sexual identity and orientation assessment is limited due to a lack of data across the system.

This project is driven by three goals: 1) To establish and sustain system-wide priorities for gender equity in the STEM sciences; 2) To document and evaluate incremental change from data-driven policies for gender equity at the system level and in each of the six institutions, and; 3) To disseminate innovative systemic procedures for gender equity policy effectiveness and to contribute to knowledge of gender equity in higher education. This paper will describe the current progress that has been made using the top-down systemic approach and the challenges that have arisen.

The Top-down Approach
We adapted a theory of change proposed by Scott [8] to address equity in higher education across a state system, emphasizing the transformation of system-level structures and subsequent change in the individual practices underlying them (see Fig. 1). Utilizing a top-down approach at the system level, the state Board of Regents (BOR) has the power to enact policy initiatives that cultivate gender equity. Within the system, at the institutional level, administrative leaders have the power to create consistent models for gender equity policy implementation and practices. At the individual level, a coherent and consistent gender equity policy becomes a new norm in academic culture translating into change in individual practices by faculty and administrators [9], [10]. Our three levels of transformation were selected to nurture a change in the culture of the state BOR system and participating institutions as well as in the careers of women faculty in STEM through establishing a supportive policy environment for sys-tem-wide gender equity initiatives, university level changes in equitable implementation and increased faculty awareness of equity issues.
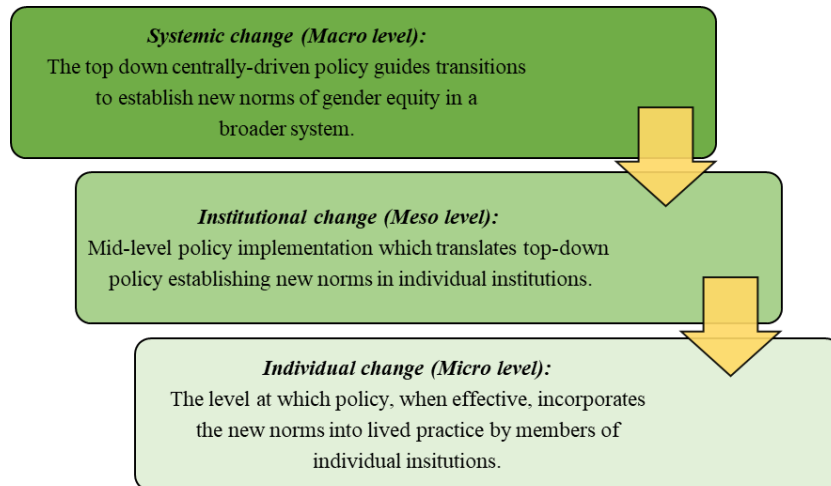
Fig.1 A model of progressive change from top-down authority [8].

Scott's theory [8] resonates in the management literature, although imperfectly. The classic model of institutional change proposed by Lewin [11] also requires three steps: 1) "Unfreezing or thawing" current system practice; 2) "Change or Transition"; and 3) "Re-freezing" system practice with new norms. Lewin suggests that systems become hidebound, and that effective change occurs at the system   level, which complements Scott's notion of "top-down" impetus for change. Lewin's change or transition stage reflects the implementation at the meso-level where new practices are both translated and practiced, reflecting Scott's institutional level. Lewin's "re-freezing" stage in essence translates to creating the change goal as a "new norm." Here, according to Scott's theory of change, policy change from the macro-level, as implemented at the meso-level, must be integrated into individual daily practice at the micro-level to endure.

As a small rural state, the higher education system South Dakota requires frequent cooperation across institutions, and enables more "face-to-face" interaction among institutional leaders to effect change moving from the BOR level to impacting faculty. (see Figure 2). The moderate collective size of our six institutions often allows for not only the timely implementation of policies, but also their assessment. The six state institutions partnering in this project provide a diversity of representation in the STEM disciplines and differing strengths in their curriculum and specializations. Three of the six institutions are Ph.D. granting institutions, and the remaining three are predominantly undergraduate institutions.

Statewide Data-Driven Approach to Policy Priorities

As a small rural state, data collection at individual institutions often suffers from problems related to "small-n" values. In order to achieve the goals of the project, it was necessary to take a data-driven approach including all state institutions to mitigate commonly encountered attitudes which small n-values cannot validate as actual issues; these attitudes have anecdotally been roadblocks to enacting change. A number of studies have been conducted or are in progress to establish a compelling need for policies that address gender equity. This paper includes initial results from cross-state studies including:
- Salary
- Faculty Annual Reviews (FAR)

- Retention
- Service

Salary Study
Nationally, research indicates female faculty receive lower salaries than their male counterparts, as noted in [12], [13], [14]. A study conducted by the College and University Professional Association (CUPA) in 2017 looked at "250,000 full-time faculty at 700 higher education institutions (tenure track and non-tenure track), as well as academic department heads and adjunct (pay-per-course) faculty" [15]. It found that female faculty are paid less than male faculty, and over a 15-year period, this trend has been consistent. Starting salaries for females tend to be lower than males, as described in [16], [17]. As Perna [18] argues, initial inequities in salaries cannot be resolved in a performance-based system with percentage increases. This inequity in starting salaries and other factors contribute to female faculty seeking employment at a different institution or in industry. It is important to note that it is a costly affair to hire new faculty as compared to retaining faculty, which can be a significant cost savings to employers therefore demonstrating the cost savings of salary equality policies that contribute to the retention of female faculty.

More locally, historical data validates that female faculty at individual academic institutions in the state have lower salaries; however, it was unknown whether salary equity is a persistent system-wide issue within the state public regental system. As a separate portion of this grant research project, a policy and climate survey was administered to faculty at the six institutions. The policy survey data indicate that faculty would like to see more attention to the salary equity policy by the Board of Regents. Based on the policy and climate survey data from the six regental institutions, 46.9% of faculty indicated salary equity as their top priority for the campus climate policy. This salary study examines differences among STEM faculty within the SD Board of Regents system based on gender, academic rank, and regental unit. By analyzing salary data from all six institutions, we sought to determine whether equity issues are local or centralized. We defined STEM fields using two-digit CIP code data as described by the NSF. This approach is more inclusive as it reaches all levels of STEM fields, whether biological sciences or neurological sciences.

For the study:
- Salary and associated data were collected from six institutions over seven academic years (2011-2018).

- Data variables included salary, rank (Assistant, Associate, and Full Professor), year, regental unit, and gender (sex) for full-time STEM faculty.

Although preliminary, the data indicate there is a significant difference between men and women STEM faculty, controlling for year, rank, and university (T = 4.99, p<0.0001) with men making an average of $3623.80 +/- $725.80 more than women (Figure 3).

An update to this study is in progress; current salary data are being re-evaluated using a more rigorous mixed model analysis. Further, we plan to run data with the inclusion of traditional "soft sciences," e.g., sociology and psychology, and hard sciences, but also plan to run the data without the inclusion of soft sciences. Research indicates that a different "picture is painted"

with the exclusion of soft sciences, as these fields tend to be less underrepresented with respect to gender. We are also examining policies that may be enacted at the state level to address the lack of parity in salary by gender.
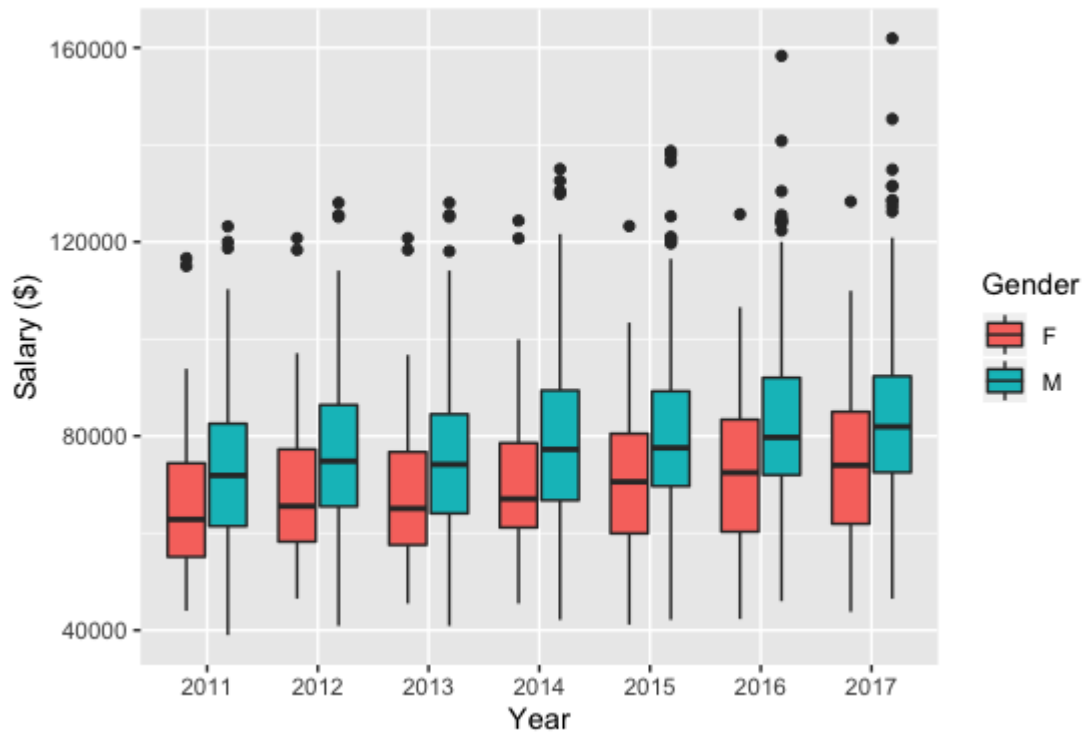

Figure 3. Gender differences in salary across STEM faculty in a regental organization across years. Preliminary analysis indicate males make significantly more than female STEM faculty across 7 years.

Faculty Annual Reviews
A blinded sample of faculty annual reviews (FAR) was   evaluated to determine any biases evident in annual reviews. Individual anecdotes point to some significant problems in this area, but the full study is intended to determine if these concerns are systemic. An axial coding structure was implemented utilizing the three-level structural feminist framework proposed by Risman [19], [20]. Risman [19] purports that the social structure of gender causes consequences on three critical levels: the individual level (development of gendered selves), the interactional level (differing gendered expectations for men and women), and institutional level (policies regarding access to resources). These categories were then subdivided according to faculty gender. Future goals for faculty were coded separately using these three categories.

We analyzed FAR content that focused on areas of teaching, research, and service from both male and female faculty (n=32). The reviews were all completed within the 2015-16 academic year. Faculty Annual Reviews were qualitatively analyzed and coded for individual, interactional, and institutional references.

Results were sorted according to Risman's categories and compared by gender. Statements made regarding faculty members' current workloads, personal projects taken on by faculty, and current

research projects were coded as individual level data. This was determined as a matter of reduction into categories: interactional level data included more than one person, and institutional level data referenced the department and/or university system in some way. All other data was categorized as individual level data.

Some of the main differences in the FAR study included:
- Lack of documentation related to teaching expertise was discussed within female faculty FARS and was absent within male faculty FARS. In particular, female faculty were expected to provide evidence of teaching effectiveness above and beyond student reviews, whereas male faculty were not. Example language included: "Unfortunately, she did not present additional forms of evidence for teaching", "No additional evidence of teaching effectiveness was submitted", and "IDEA scores were the only evidence submitted toward (her)teaching evaluation". "After reviewing _____ IDEA scores from _____, I concluded that (he) is an engaging instructor."
- Women were noted for how their service impacted the department climate and their "citizenship" was noted. While men were also recognized for departmental contributions related to service activities, the impact of those activities on the department was not discussed.
- There was no discernable difference between female and male reviews when discussing institutional impacts of their work.

Currently, there is an effort to obtain a much larger sample of faculty FARs for a more comprehensive evaluation. The current results indicate the need for continued training of department chairs and university administration related to implicit bias as well as policies establishing a consistent procedure for faculty evaluations, required training for administrators, and consistent expectations related to areas of teaching, research, and service for faculty regardless of sex.

Additional Data Collection
Currently, two additional studies are in progress across the state. A service survey, based on a methodology developed by Mitchell and Hesli [21] is being conducted to determine the extent of service activities by gender and the extent to which females and males negotiated for or were offered resources as part of their faculty position. A retention survey is examining the rates of retention of faculty by gender and reasons why they left. These studies have planned completion by the Summer of 2020.

Statewide Policy Implementation

Data collected on the cost of faculty replacement was significant leverage to enact more family-friendly policies on the tenure clock. In particular, extensive data from research studies and reports from professional societies, government agencies, state government reports, and public policy research and advocacy organizations clearly demonstrate the cost of replacing an employee is higher than the cost of paid family leave. This holds true in academia. The cost of replacing STEM faculty can be especially high where start-up incentives are a common part of the recruitment package, and where departing faculty often take substantial grant funding with them, resulting in a loss of indirect funds to the university, as well as equipment purchased with the grant funds.

To this end, the project had its first successful implementation of state-wide policy with an automated stop-the-clock policy, now part of the BOR policy handbook. The policy was presented to the BOR with the following rationale. A policy that allows "stop the clock" to gain extra time before the tenure review is common practice adopted by academic institutions for tenure-track faculty to deal with life transitions or issues. This policy, theoretically, benefits the new faculty. In practice, however, many faculty are reluctant to stop the clock concerned that requesting a tenure extension will have negative consequences, such as department promotion and tenure committees, external reviewers, and/or administrators viewing it as a reflection on the employee's work ethic stigmatizing them and hurting their chances at tenure. One approach to remove the stigma, aid in retention of good new faculty, and improve the odds of gaining tenure is to make the policy automatic. Indeed, in 2003, only 27% of women and 18% of men eligible to stop the clock under elective policies did so, as reported in [22].

Most early discussions of tenure clock stoppage were based on childbirth as an issue. However, it is clear that there are a number of other events, affecting both men and women, which can influence a faculty member's work record. Women faculty are still more likely to have interrupted periods as they are often in their childbearing years at the same time they are developing their careers [23].

In 2005, as a means to address the stigma associated with requesting a tenure extension period, and to make the process more equitably distributed across pre-tenured faculty, Princeton University instituted the first automatic stop the clock policy. Princeton implemented the policy when it was found that few people took advantage of the elective policy although many stated that they wanted to [24]. Since then many schools have adopted an automatic tenure clock stop policy. Data show that productivity is not affected by these policies. Research from Iowa State's Faculty Work-Life Database additionally indicated that both men and women faculty believed that their stop the clock policy helped to recruit faculty to their institution [25].

The Dakota BOR system had an elective process for stopping the tenure clock for birth or adoption of a child, being a major caregiver for an immediate family member, or suffering from an extended serious illness among other reasons. The implementation of this policy will increase the usage of this policy, and decrease any associated stigma, to implement an automatic stop the tenure clock policy, with the opportunity for faculty to opt out. This is a *no cost* approach to creating a supportive workplace that facilitates recruitment and retention of faculty.

To help ameliorate stigma with taking maternity leave, the policy states that "Faculty members shall not be disadvantaged for compensation, promotion, or advancement because they have been granted a tenure review extension. However, should the faculty member choose to revert to his/her original timeline, this would be allowed. For this, the employee must notify his/her supervisor in writing by March 30 of the academic year prior to the original tenure year. "

The Benefits and Challenges of a Statewide Approach

The statewide approach has a number of advantages, most specifically

- Key players at the top can encourage cooperation across the institution

- System focus provides a system-level platform to bring up issues of equity and fairness
- Project data collection identifies clear issues of equity across the system

However, there have been a number of challenges that have arisen over the course of the project. The most significant of these is turnover at all levels. All six state universities have had turnover at the provost level since the start of the program; three have had more than one turnover in the period of the grant. Many of the universities have new presidents; in some cases, there has also been more than one presidential change in the period of the grant. There has also been turnover in the BOR staff and legal team. The constant administrative turnover leads to changes in institutional priorities and a near constant need to re-advocate to and re-educate administration on gender equity. Finally, the project team has also turned over with only four of the original l0 engaged in the project.

Additional challenges, other than those common in distance teaming for research, include
- State legislative initiatives focused on discouraging work on equity and diversity;
- The original radius of trust [26] established among the Provosts as the steering committee for the grant when the grant was submitted dissolved as steering committee members moved to new positions   , so institutional cooperation in data collection and support gender equity policy development and implementation has suffered;
- Project data collection identifies strong pockets of resistance among STEM faculty

Some of the consequences of these actions include:
- Faculty working on equity initiatives find themselves stuck between two ineffective models
    - A "topless" top-down commitment to change
    - Faculty resistance to the discussion for the need to change impacts our ability to launch a bottom up strategy
- With some BOR support, the project team was still able to implement one policy, and are in discussion on second, but policy changes require buy-in from an ever-changing set of provosts.

Another significant challenge has been collecting the necessary data across the state system. Overworked administrators and necessary involvement by the BOR in data collection have created logjams in obtaining enough data to complete the necessary studies. Without significant data collection, we continue to run the risk of results being dismissed as being tied to individual cases or small n-values.

Conclusions and Continuing Work

Despite challenges involved in the project, the research team has found a number of positives, not the least of which is a cohort of engaged and motivated women interested in being change agents for more inclusive policies and climates across state campuses. The team is continuing to improve data collection, advocate with administration, and develop evidence-based recommendations for policies and practices that would benefit all faculty members across the state. Continuing work includes improvement and enhancement of the FAR and salary studies,

completion of service and retention studies, recommendations for best practices and policy changes to mitigate unconscious bias in faculty searches, and continued identification of policy improvements at the state level.

Acknowledgements

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