Career Navigation Initiatives for Women STEM Faculty in Support of Institutional Transformation

Prof. Elizabeth Dell, Rochester Institute of Technology (COE)

Professor Dell is an associate professor in the Manufacturing & Mechanical Engineering Technology department at RIT. She serves as the Faculty Associate to the Provost for Women Faculty and is co-PI for RIT's NSF ADVANCE project. Her research interests include: characterization of biodegradable plastics and environmental consideration in materials selection for production design, the impact of technology paired with active learning pedagogies on student learning, and effective strategies for increasing gender diversity in STEM disciplines.

Dr. Carol Elizabeth Marchetti, Rochester Institute of Technology (COE)

Dr. Carol Marchetti is an Associate Professor of Statistics at Rochester Institute of Technology, where she teaches introductory and advanced undergraduate statistics courses and conducts research in statistics education, deaf education, and online learning. She is a co-PI on RIT's NSF ADVANCE IT project, Connect@RIT, and leads grant activities in salary equity and faculty data.

Prof. Sharon Patricia Mason, Rochester Institute of Technology

Professor Sharon Mason is an Associate Professor in the Department of Information Sciences and Technology at RIT where she has served on the faculty since 1997. Sharon has been involved in computing security education at RIT since its inception. She is the PI of for the Department of Defense (DoD) Information Assurance Scholarship Program (IASP) awards to RIT. These scholarships enable students to study and do research in graduate programs in security, forensics and information assurance. To date, scholarships to RIT students total more than $800,000.

Prof. Margaret B. Bailey, Rochester Institute of Technology (COE)

Professor Margaret Bailey, Ph.D., P.E. is a Professor of Mechanical Engineering within the Kate Gleason College of Engineering, Rochester Institute of Technology. Dr. Bailey teaches courses and conducts research related to Thermodynamics, engineering and public policy, engineering education, and gender in engineering and science. She is the co-author on an engineering textbook, Fundamentals of Engineering Thermodynamics, which is used worldwide in over 250 institutions. Dr. Bailey is the Principal Investigator (PI) for the RIT NSF ADVANCE Institutional Transformation grant. The goal of this large-scale ($3.4M), multi-year university-level organizational transformation effort is to increase the representation and advancement of women STEM faculty. At the university level, she serves as Senior Faculty Associate to the Provost for ADVANCE and co-chairs the President's Commission on Women.

Prof. Maureen S. Valentine, Rochester Institute of Technology (CAST)

Maureen Valentine, P.E., has been a faculty member at RIT for more than 23 years. She held the position of Department Chair for the Department of Civil Engineering Technology, Environmental Management, and Safety from 2000 to 2007 and Associate Dean of the College of Applied Science and Technology from 2007 to 2015. She is currently Professor in CETEMS and co-PI on the AdvanceRIT initiative. Her scholarly activities recently have focused on project-based service learning, women in technology programs and the faculty who team them.

Dr. DeLois Kijana Crawford, Rochester Institute of Technology (GCCIS)

Dr. Crawford is the Women of Color Team Leader for the ADVANCE@RIT Grant. She is a professor of Sociology and Anthropology. Co-Program Director of the Sociology/Anthropology Department

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In preparation for creating an institutional transformation strategy, researchers conducted a multi-year self-study (NSF ADVANCE 0811076) to identify career advancement and navigation barriers for current women faculty at a large private university and establish how well the university addresses issues important to the recruitment, retention, and advancement of women STEM faculty. Results of a faculty climate survey, objective human resources data review, and benchmarking led to the identification of barriers in the areas of career navigation, climate, and flexibility in work/life management balance which have been previously reported. [1-4] Opportunities for reducing barriers and launching new interventions were assembled into a comprehensive institutional transformation strategy funded in 2012 by NSF ADVANCE (1209115). The goal of this funded project, referred to as AdvanceRIT, increases the representation and advancement of women STEM faculty by creating new interventions, structures, and resources to support faculty career navigation while promoting supportive and aligned cultural change. An additional emphasis adapts interventions to address the needs of key sub-populations including women of color and deaf and hard-of-hearing women faculty. The AdvanceRIT project: 1) refines and strengthens targeted institutional structures; 2) improves the quality of women faculty's work life; 3) aligns institutional, administrative, and informal systems of power and resources to support and sustain progress towards the project goal; and 4) enhances the working environment and support career advancement for women faculty that supports career goals for all faculty.

Initiatives within the AdvanceRIT project that are focused on career navigation include the *Connectivity* Series, *Connect* Grants Program, Resource Allocation Committee (RAC), Women of Color *Connectivity* Series and P & T SMARTS, Promotion Package Preparation (P³) Group, AdvanceRIT Team Leadership Development and Team Building Efforts, Dual Career Assistance Program, and Faculty Evaluation Policy/Practice. This paper describes a subset of the AdvanceRIT career navigation activities, outcomes and evaluation, and progress towards sustaining these efforts beyond the length of the current AdvanceRIT funded project.

Introduction

A group of women faculty at the Rochester Institute of Technology (RIT) have been on a nearly 10 year journey to increase the representation, retention and career advancement of women faculty in Science, Technology, Engineering, and Math (STEM) and Social & Behavioral Sciences (SBS) fields at their university. The road led them through an NSF ADVANCE Institutional Transformation Catalyst project titled Establishing the Foundation for Future Organizational Reform at RIT (EFFORT@RIT) (NSF Award #0811076) between 2008 and 2011 that supported them in completing a self-study. The project goal was to develop an evidence-

based approach to address factors resulting in the under-representation of women in STEM faculty positions. Results of a Human Resources objective data review, a university-wide faculty work-life survey, and benchmarking in this early project led to the identification of barriers in the areas of career navigation, climate, and flexibility in work/life management balance which have been previously reported. [1-4] At that time, faculty perception of value and influence was significantly higher for male faculty than female faculty, and significantly lower for AALANA faculty than for white faculty. Faculty perception of department climate and work/life stress differed significantly by gender as well, with female faculty having higher reported levels of stress and a less positive view of department climate. The research supported the idea that climate and stress could impact career navigation.

In response to these findings, this group of faculty successfully authored a comprehensive institutional transformation strategy proposal, funded in 2012 by NSF ADVANCE (NSF Award #1209115). The AdvanceRIT project kicked off with a goal of increasing the representation and advancement of women STEM faculty by creating new interventions, structures, and resources to support faculty career navigation while promoting supportive and aligned cultural change. One of several objectives of these interventions was to enhance the working environment and support career advancement for women faculty while addressing two broad types of barriers facing women faculty: workplace issues and personal challenges. Workplace issues may include feelings of marginalization or isolation[5], lack of sponsorship by senior colleagues [6,7] and lack of mentoring [8-10], all of which can result in slowed career advancement. The AdvanceRIT project has sought to disrupt the existing processes and practices on campus to accelerate career progression. While the focus of all Advance programs is on women in STEM, an additional emphasis at RIT is to adapt interventions to address the needs of key sub-populations including women of color and deaf and hard-of-hearing women faculty.

This paper provides an overview of some of the specific initiatives within the AdvanceRIT project that are focused on career navigation, including the *Connectivity* Series, *Connect* Grants Program, the Resource Allocation Committee (RAC), Women of Color *Connectivity* Series, P&T SMARTS, and the Promotion Package Preparation (P³) Group. Other initiatives, such as the Dual Career Program and Faculty Evaluation Policy/Practice are still in the development stages, the latter of which will be discussed briefly within this paper. For each initiative, this paper describes the career navigation activities, outcomes. evaluation, and progress towards sustaining these efforts beyond the length of the AdvanceRIT project.

Discussion

The *Connectivity* Series

The *Connectivity* Series is a series of events and workshops to develop strategies and competencies related to the recruitment, retention, and advancement of women faculty at RIT. Retention related sessions focus on career satisfaction, career navigation, and work-life integration. Advancement related events include topics related to leadership development, strategies for promoting recognition of your work and effective practices related to securing funding, research, and publication. Sessions related to Career Navigation include sessions on navigating the Tenure & Promotion processes, communication skills development, navigating service assignments, mentoring resources and strategies, teaching strategies, negotiating skills, and networking. Some sessions are targeted to women faculty, but many sessions are open to all faculty.

Evaluation of the *Connectivity* Series includes participant counts and a satisfaction survey. The objectives and outcomes are presented in Table 1. Evaluation is also informed by the COACHE (Collaborative on Academic Careers in Higher Education) Climate Survey administered every three years. Participant counts are tracked by gender and NSF designation as shown in Table 2. Each year the number of participants has increased. Efforts to promote *Connectivity* Series sessions to all faculty (not just women) brought a significant increase in the number of faculty men participating after the first year.

TABLE 1: Objectives and Outcomes for *Connectivity* Series Evaluation Plan

Objective	Short-Term Outcomes Each AY	Intermediate Outcomes AY 2017	Long-Term Outcomes AY 2019	Evaluation Data Source (s) / Cycle
Strengthen faculty core competencies and build faculty networks	• Continual review of Series satisfaction data to determine offerings /faculty career needs • Participant counts • Transition series offerings to other faculty interest groups	• Assess *Connectivity* Series impact on participating faculty's career development • Full integration of series with other faculty interests groups and institutional partners	Inform NSF ADVANCE national community with best practice recommendations	• *Connectivity* Series Evaluations (individual sessions; annually) • COACH Climate Survey (tri – annual) • End of Project Faculty Survey, Focus Group, Interview (summative)

Table 2: Participant Counts for *Connectivity* Series

NSF Designation of Participants	2013-2014			2014-2015			2015-2016		
	Women	Men	Total	Women	Men	Total	Women	Men	Total
Science, Technology, Engineering & Math	58	31	89	60	55	115	56	65	121
Social & Behavioral Sciences	17	8	25	24	11	35	15	12	27
NON-Science & Engineering	32	10	42	29	13	42	34	10	44
PROF/OTHER	9	4	13	12	10	22	23	8	31
ADMIN/STAFF	8	9	17	13	13	26	38	6	44
Total	**124**	**62**	**186**	**138**	**102**	**240**	**166**	**101**	**267**

Figure 1 contains the *Connectivity* Series satisfaction survey results for the 2015-2016 Academic Year. There were 214 respondents with 93 % agreeing or strongly agreeing the session was a valuable use of time, 95 % agreeing or strongly agreeing the presenter was knowledgeable, and 90 % agreeing or strongly agreeing that the session was relevant to their role in the recruitment, retention, and advancement of a diverse faculty. A paper which focused solely on the *Connectivity* Series for the AdvanceRIT project contains a full listing of series offerings, analysis of evaluation results and plans for sustaining the series.[11]

The *Connect* Grants Program

The *Connect* Grants drive discovery and learning within an environment that supports the development of project proposals and the process of peer review. These mini-grants encourage leadership and career development, mentoring, networking and research collaboration, while enhancing and advancing the university's multifaceted initiatives and scholarship infrastructure.[12]

The *Connect* Grants are a collaborative effort, offered through funding from AdvanceRIT and the Office of the Provost with advisory support from the Faculty Career Development Services, the Division of Diversity and Inclusion, and Sponsored Research Services.

Funding supports projects designed to foster faculty leadership and career development by empowering faculty and academic unit leaders in broadening opportunities to promote faculty career advancement. In particular, the grants are structured in a way that support creative efforts to guide faculty through various critical career stages such as tenure review, promotion to full professor or leadership position development. Because the funded proposals must support an AdvanceRIT project objective or the project's overall goal, the intent is that funded *Connect* Grant projects will contribute to the overall institutional transformation effort.[13]

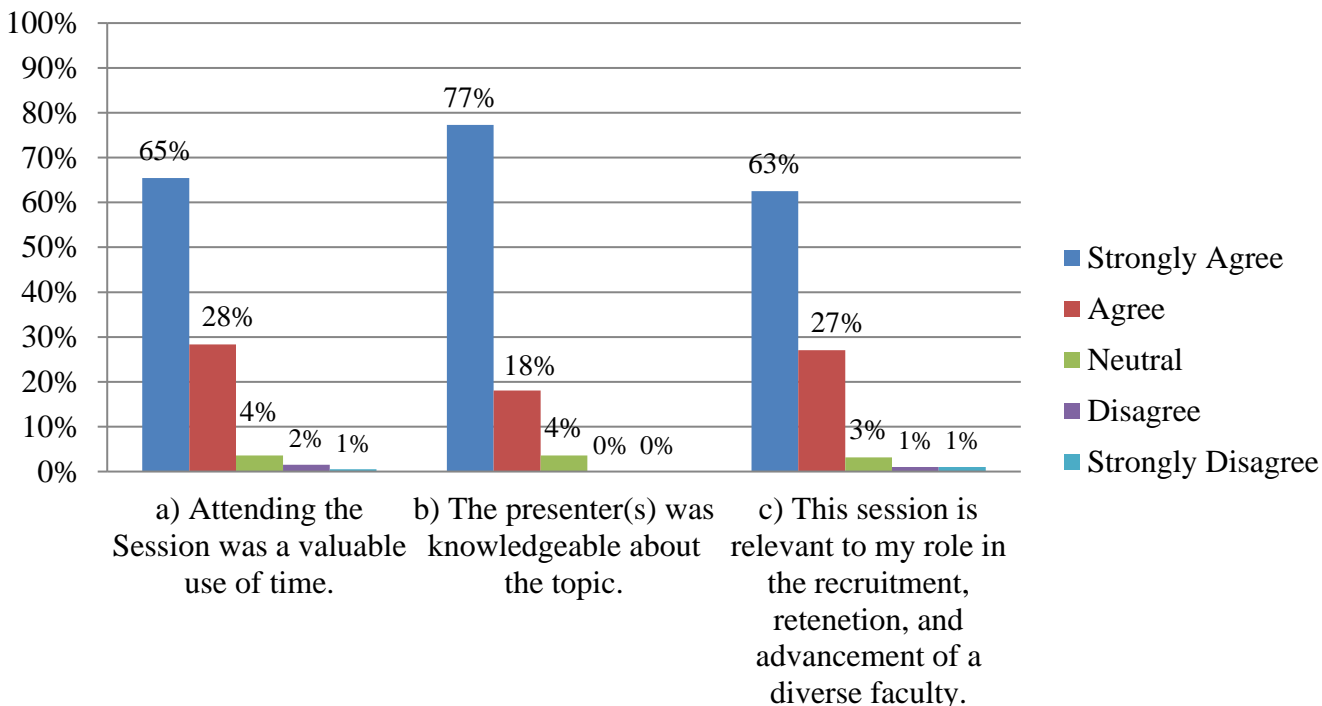**2015-2016 *Connectivity* Series Satisfaction Survey Results**

Figure 1: *Connectivity* Series Satisfaction Survey Results

In addition to directly supporting key career efforts, the overarching process is designed to promote career preparation. By emulating the National Science Foundation grant proposal process, the *Connect* Grants prepare faculty proposers for external grant submissions as they submit proposals that must identify project objectives, a project mentor, letter of recommendation from department head or dean, evaluation plan, budget with justification, and discussions on the intellectual merit and broader impacts of the proposed efforts. Proposers also receive feedback on their submission from the review panel. The cross-university faculty and administrative staff review panel also provides an opportunity for faculty to gain a deeper understanding of the review process. An evaluation conducted in 2016 by the University of Washington (UW) Center for Evaluation and Research for STEM Equity found that awardees "found the grant writing process to be beneficial in helping them refine and package their ideas, build relationships with mentors, and develop literature reviews."

Some of the grantees found themselves using parts of their proposal for federal grant proposals." The UW evaluation also identified the following career impacts from the awardees: Internal and External Collaborations Strengthened, Mentorship by Grant Mentors and Peers Benefitted Grantees; Increased Confidence in Expertise and Dissemination of Work; Value and Influence Manifested as Respect, Credibility, and Leadership Potential; Leadership Experience Built Tangible Skills; Networking Impacted Grantees' Career Advancement; Increased Research Autonomy; Increased Project Visibility Through Networking and Promotion; Promotion and Tenure Advancement, More Leadership Opportunities and More Research Money.[14]

Resource Allocation Committee (RAC)

In 2010, prior to the institutional transformation grant, the university conducted a faculty salary equity study that found unexplained salary differences along gender lines. Because salaries for women have historically been lower than those for men in many fields this finding was not surprising.[15,16,17,18] The university responded by establishing funding to address salary inequities, prompting the need for further analysis to determine the success of the process for salary redress. The redress process and subsequent analysis did not include faculty collaboration or input, were not transparent to faculty, and the results were not generally shared with the faculty. A number of opportunities existed to improve the transparency in this overall process and positively impact faculty career navigation, especially regarding resource allocation.

The institutional transformation project was funded and commenced in 2012, including an initiative for a comprehensive study of salary equity among faculty. The NSF toolkit provided to grantees by NSF described the essential elements of the required salary equity study[19] and extensive guidelines[20] for such studies have been published by the American Association of University Professors. With the goals of increased transparency for faculty and high levels of confidence in the results of the salary equity study for university stakeholders, AdvanceRIT initiated the formation of a cross-university Resource Allocation Committee (RAC) comprising administrators and faculty with expertise in statistical analysis, faculty hiring and evaluation processes, institutional data, and gender equity considerations. The grant team aimed to promote internal dissemination of the methodology and the observed results. Over the course of the study, this collaborative group of faculty and administrators together developed a deep understanding of the statistical analysis and a high-level of confidence in the study's outcomes.

Due to this confidence, the university administration disseminated the executive summary of the salary study report to the campus.[21] Key findings of the analysis are encapsulated in the following quote from this executive summary document:
 "The coefficient of each independent variable indicates its effect on the dependent variable, controlling for all the other variables included. As expected, discipline, rank, years in rank, and performance rating above "meets expectations" were significant predictors of salary with

positive coefficients, while lack of a terminal degree was a significant predictor with negative coefficients. The estimated coefficients for the variable Female, while negative, were not statistically significant from zero in either model, indicating that the observed average salary difference by gender can be attributed to chance, as opposed to some systemic source." (p. 3)

With the support of the RAC, the university has begun presenting the results to the faculty of individual colleges, along with information about salary processes at the university. While the findings may not have revealed new knowledge, they do present potential career navigation lessons. Discipline is probably the largest factor in determining faculty salary and the most difficult to address. But ways exist in which faculty may increase their salary.

- *Promotion to Full Professor*: Women tend to stay at associate longer than men.[22] This may be attributed, in part, to differing promotion expectations for male and female faculty and/or the beliefs of women faculty that they need more solid credentials than men to be promoted to full professor.[23] This is not surprising considering that the decisions of promotion committees often rest on values and judgments, rather than on measurement or clear expectations.[24,25] Clearly, rank matters with regard to salary, so it is important for women faculty to apply for promotion, and for promotion committees to acknowledge the potential for bias and establish procedures to minimize bias.

- *Performance Appraisal*: Historically, women have been under-recognized for their contributions in science, a phenomenon known as the Matilda Effect.[26] In an experiment, researchers found gender bias in the evaluation of publication quality,[27] concluding that, *"Even though the effects may seem small from a statistical perspective, they are significant and will add up greatly across individual academic careers. Moreover, certain personal characteristics such as motherhood may further accentuate gender bias." (p. 622)* Hence, each performance appraisal is important. Women faculty should not disregard appraisals that do not recognize their contributions, and administrators should be aware of the potential bias in evaluations and incorporate best practices to prevent bias.

- *Discussions about Salary*: Women faculty may be reluctant to make requests regarding money, but they see men faculty receiving more out-of-cycle merit raises and other discretionary funds.[23] Information about salary processes can provide faculty and department heads a basis for productive dialogues around salary.

Prior to the start of the 2012 institutional transformation project, the university had already committed to conducting annual faculty salary equity studies, and has recently asked the RAC to engage in this year's salary equity study, continuing the collaborative and transparent nature of the process. The next step is to formalize a RAC-like entity in university policy. Avenues for implementation are currently under investigation, including an advisory group to Human Resources for salary studies or a presidential-level committee to examine salary-related issues. Such a committee could be a model of transparency for salary-related topics, providing women faculty with knowledge of salary systems and assisting administrators in establishing best practice to avoid bias in setting and adjusting faculty salaries.

Women of Color *Connectivity* Series and P&T SMARTS

During the spring of 2013, RIT conducted a study to determine the lived experiences of African American, Latina American, Native American (AALANA) women faculty, especially in light of their low retention and advancement rates both within the university and nationally. The qualitative study consisted of assembling two focus groups, both largely comprising women tenure-track STEM-SBS AALANA faculty. The women articulated that their race/ethnicity and gender put an added burden on their efforts to advance in their careers. Their discussions centered on themes of isolation/not belonging, disrespect, and lack of trust.

Strategies that the focus groups identified as essential for success include mentoring and networking via formal and informal structures. Within one of the groups, there was rich discussion about tenure and promotion expectations. Other topics and themes to which the groups devoted a lot of attention were self-advocacy as a supporting strategy; support, or lack thereof, from a faculty member's department or the university; and the emphasis some administrators place on student opinions as a basis for assessing teaching performance.

A research team analyzed the data from the focus groups and used it to inform the development of a series of networking and mentoring initiatives. Two of these initiatives are The AdvanceRIT WoC (Women of Color) *Connectivity* Series ("WoC *Connectivity* Series") and Promotion & Tenure Strategies for Minority-Women Academics at RIT for Transformative Success ("P&T SMARTS"). Both have played an important role in the career navigation of their participants.

WoC *Connectivity* Series

The WoC *Connectivity* Series serves as a tool of empowerment for participants. It harnesses the unique social networking pathways particular to AALANA faculty and uses the networks as vehicles for career development and advancement. The participants who attend WoC *Connectivity* Series sessions have the overall goal of cultivating a safe space for social networking and community building by fostering relationships, by combatting isolation through the sharing of experiences, and by providing access to critical information. The WoC *Connectivity* Series sessions have catalyzed self-advocacy as a support strategy. It, therefore, employs a grassroots, bottom-up approach to breaking through barriers and fosters mutual support among members. Members eagerly recruit and welcome new members. The WoC *Connectivity* Series initially grew out of the findings of the focus groups. The garden of ideas to promote the increased retention and advancement of AALANA faculty continues to grow and evolve, as each individual WoC *Connectivity* Series session becomes fertile ground for the harvesting of further insight into the population it serves.

P&T Smarts is an initiative of the WoC *Connectivity* Series and provided informal mentoring and guidance to new and/or inexperienced AALANA faculty in a number of areas, including mentoring and sponsorship, research and writing productivity, teaching effectiveness, time management, and work/life balance by engaging them with experienced faculty with the primary goal of helping them develop successful careers. The process leading to promotion and tenure at an academic institution is sometimes fraught with tension and uncertainty. The only requirement for joining P&T Smarts was to commit one to two hours a month to reading and other assignments. Experienced faculty members and administrators used their deep understanding of the unique issues and challenges that AALANA female faculty face to facilitate discussions during P&T Smarts gatherings on various issues confronting faculty, engage AALANA faculty in deep discussion about smart strategies for attaining promotion and tenure, and help develop a sense of common purpose and support.

P&T SMARTS

P&T SMARTS is an outgrowth of and subsumed the WoC *Connectivity* Series P&T Smarts initiative. It employs a multi-faceted strategic approach that provides advice, guidance, and feedback, as well as workshops on identifying and using research-based best practices to help AALANA WoC navigate their careers. P&T SMARTS eases the process by building a community of support around issues of promotion and tenure and by promoting strategic thinking on these issues that help participants navigate their careers. They conduct hands on exercises on issues ranging from networking, applying best practices to writing and presenting scholarly work, to building a strong and balanced promotion and tenure portfolio, etc. Their objective is to create a supportive environment and disseminate best practices to improve communications, increase transparency in the tenure and promotion process, give WoC faculty strategies to manage their ccareers, as well as tools to address measures of accountability that may lead to a sustainable pipeline for success and a stronger and more successful community of WoC professors and scholars.

Focus groups have been used to evaluate the success of the WoC *Connectivity* Series and P&T Smarts. By examining the characteristics, experiences, and perceptions of AALANA women faculty, as well as the policies of the departments and university, and objective data based on the AALANA faculty population, the focus groups identified unique barriers and catalysts to promotion, tenure, and advancement. The WoC *Connectivity* Series and P&T SMARTS strategies and interventions address how to remove these barriers, identify catalysts for change, and create pathways for AALANA women faculty to achieve promotion and tenure. Because there are continuing concerns regarding exodus of AALANA faculty over the past several years, for sustainability of this program to be successful post grant, administrative and financial resources will be required. P&T SMARTS has created momentum, AALANA faculty are engaged and the program has received other sources of funding.

Promotion Package Preparation (P³) Group

Promotion Package Preparation (P³ or P-cubed) Group is a new initiative as of 2016 that involves the creation of a peer mentoring group for women faculty preparing to submit their promotion package for promotion to full professor. Colleges were informed about this new group and asked for names of women faculty who were planning to submit their promotion materials in fall of 2016. These women were contacted and invited to join this peer mentoring group. The group consisted of seven faculty from five of the nine colleges at RIT. For the P-cubed meetings, there was a discussion topic and a suggested "assignment" to complete before the meeting. Topics and related assignments are presented in Table 3.

Table 3: Promotion Package Preparation (P³) Group Meeting Topics and Assignments

Topic	Assignment
College Policies	Participants brought and discussed their individual college's promotion policies
Research Statements and External Letters	Participants reviewed a colleague's promotion package with the following aspects to be considered: • How well did they sell their work? • Were there interesting strategies/formatting used? • Were there things you thought could have been done better? AND Contact at least one potential external reviewer. Faculty shared strategies for selecting the reviewers and experiences with the process.
Panel Session with Senior Leaders: Making a Compelling Case- *A Discussion with the Provost and Senior Leaders*	Participants developed questions for the panelist that included: • Can you give an example of a strategy someone used in making their case for promotion that you thought was particularly successful? • Can you share what you think are common mistakes that candidates make in preparing their package? • If your time since last promotion has involved both mostly-administrative time and teaching/research time – do you have suggestions on packaging our narrative to address needs of promotion guidelines?
Prep Time	Participants brought their laptops and works on their documents together.
Submission Celebration	Participants gathered to celebrate submission of the promotion packages

The members of P³ Group found participating in this peer support group a beneficial experience as they prepared their Promotion Packages. Recommendations improvement included assembling the group earlier in the Promotion Process. It is felt that this type of support group could also be helpful in assisting a faculty in deciding if they would be ready to submit for promotion. The most useful session was the Panel Session with senior leadership. Feedback included the statement: "*This was a great panel, very helpful.*" The AdvanceRIT team is already

planning to run this session again and conjunction with P&T SMARTS. AdvanceRIT will be supporting expansion of the P³ Group by coordinating promotion prep support groups for all faculty who are preparing a promotion.

Faculty Evaluation Policy/Practice

Many of the initiatives already described speak to activities that empower women faculty to navigate career growth. Another AdvanceRIT initiative reduces barriers to career advancement from a different direction, from the perspective of the faculty annual review process.   Faculty Evaluation is a large, enterprise wide system that encompasses summative and formative review activities, such as the annual evaluation process, student evaluations, peer evaluations, tenure and promotion. As part of the institutional transformation work, a Faculty Evaluation Committee was created to consider opportunities for improvement in the faculty annual evaluation process to improve consistency and equity across campus. Committee members include department chairs, a dean, a faculty member from the AdvanceRIT project, the Associate Provost of Academic Affairs, the Director of the Faculty Career Development center, and a representative from Human Resources.

The initial work of this group focused on gathering input from across the university, including current practices, feedback from faculty and department chairs on areas that need improvement along with additional fact finding research outside of the university, from organizations like EAB and other Advance Schools. The intention was to identify the most significant challenges and compile a list of suggested improvements.   The group spent an academic year gathering and reviewing the policies and practices across the departments and colleges on campus, identifying best practices and comparing those with information obtained from other universities. The key take away from the first year of work was that the discussion was much broader than originally anticipated. Recognizing that the annual review process is traditionally both formative and summative in nature, the process impacts critical career advancement milestones including merit increases, tenure and promotion. Conclusions were made at the end of the first year of work that recognized that the differences between colleges and departments were valuable, that the language in the current policy is suitable, and the room for improvement lies in the implementation. Therefore, work continues to offer guidance on implementation and areas where additional university level practices should be established.

As this group moves through its second year of work, the committee has agreed upon important overlying principles that must govern the evaluation process, and has begun to create a guidance document. The targeted audience for this document includes department heads/chairs, deans, tenure committees and promotion committees. The work is ongoing but the goal is to provide a guidance document that includes a philosophy statement, suggested best practices around performance categories (descriptions and expectations), methods of writing an evidence-based review, and methods of creating development plans that include recommended actions.

Conclusion

For over a decade, efforts have been underway at RIT to transform the university to become a more inclusive campus environment. Aligned with these efforts, a group of faculty received NSF ADVANCE funding in 2008 to conduct a detailed self-study of the university in order to better understand its level of inclusivity in regards to women STEM faculty. Barriers were identified and included opportunities associated with career navigation. This paper focuses on efforts that have been underway since 2012 through a much larger NSF ADVANCE funded project, which aim at improving career navigation within the university, including the *Connectivity* Series, *Connect* Grants Program, Resource Allocation Committee (RAC), Women of Color *Connectivity* Series P&T SMARTS, Promotion Package Preparation (P³) Group, and Faculty Evaluation Policy/Practice. The vast breadth of these offerings, affords many different opportunities for women and men faculty at RIT to improve and refine the manner by which they navigate their careers. Each year, several hundred faculty participate in the programs described within this paper and based on evaluative results to date, the vast majority report positive satisfaction with their experiences. Grant funded career navigation efforts continue to be institutionalized within the university structure. Career navigation focused initiatives are also undergoing an evaluation to better understand how these efforts support the project's overall objectives and project goal.

Acknowledgements

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