What is valued and who is valued for promotion? Enacting and sustaining a policy that rewards multiple forms of scholarship

Dr. Chrysanthe Demetry, Worcester Polytechnic Institute

Dr. Chrysanthe Demetry is Professor of Mechanical Engineering and director of the Morgan Teaching and Learning Center at Worcester Polytechnic Institute. Her scholarship focuses on faculty development, materials science education, K-12 engineering outreach, and intercultural learning in experiential education abroad. As director of the Morgan Center at WPI since 2006, Demetry coordinates programs and services fostering excellence and innovation in teaching at WPI. She is co-PI of WPI's ADVANCE Adaptation grant focusing on the Associate-to-Full promotion system for both tenured and teaching/research-track faculty.

Prof. Elizabeth Long Lingo, Worcester Polytechnic Institute

Elizabeth Long Lingo is an expert on how people co-create and advance novel solutions and systemic change, with a particular interest in gender equity and leadership outcomes. Her research has been published in top academic journals and featured in global news outlets. She is Co-PI on WPI's ADVANCE NSF Adaptation grant.

Jeanine Lee McHugh Skorinko, Worcester Polytechnic Institute

Jeanine Skorinko is a Professor of Psychology at Worcester Polytechnic Institute, and her research program attempts to understand how factors in our social environment, especially those factors we are unaware of, influence decisions and interpersonal interactions. Ultimately, my research aims to promote and enhance equality, diversity, and cultural understanding.

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Introduction

Faculty reward systems have long been problematic for a multitude of reasons. Higher education scholars have concluded that most promotion systems in the U.S. privilege research over teaching and service [1] [2] [3]. Such reward systems are incongruous with institutional missions that include teaching, service, and community engagement in addition to knowledge production. Moreover, such reward systems have been characterized as gendered, since they disproportionately value activities typically or stereotypically dominated by men and undervalue activities often undertaken by women [4] [5]. Other studies have found that ambiguities in promotion systems disadvantage women more than men [6] [7]. Still others have identified gender biases in a range of data considered in faculty evaluation, including research quality and productivity [8] [9], student ratings of instruction [10] [11], and review letters [12]. All of these factors no doubt contribute to the underrepresentation of women among engineering faculty, which is especially problematic at the senior rank of Professor. As of 2017, women comprised only 12% of (full) Professors in engineering in U.S. universities and 4-year colleges [13]. How can universities change their promotion systems to address these problems?

Dissatisfaction about promotion among women faculty, tenured Associate Professors, and teaching-track faculty across disciplines led Worcester Polytechnic Institute (WPI) to tackle this problem in recent years. In 2017 after three years of debate and negotiation [14], the WPI faculty approved a new Associate-to-Full promotion policy for tenured faculty that aimed to achieve better alignment with institutional mission and distinctiveness, valuing a broader range of faculty work and enabling multiple paths to promotion. The biggest change was to define and welcome multiple forms of scholarship, adopting many aspects of the model proposed by Ernest Boyer in 1990 [3]. The rationale was that all faculty, not only women, would benefit from being able to pursue, and be rewarded for, scholarly contributions in teaching, leadership, and service in addition to traditional disciplinary research. However, previous work has documented challenges with the implementation of Boyer's model in university reward systems [15] [16].

With those challenges and others in mind, the university applied for and received an ADVANCE Adaptation grant from the National Science Foundation in 2018, aimed at enacting the new policy effectively and sustaining it over the long term. The project includes three areas: 1) policy and process clarification for both tenured and teaching-track faculty; 2) creation of a mid-career mentoring and professional development system for all full-time faculty at the Associate rank; and 3) bias awareness and mitigation. This paper shares work-in-progress and early outcomes specific to policy and process clarification for tenured faculty. This work is significant because it shows the potential of promotion reform to elevate teaching and community engagement in ways that may also advance goals of gender equity. Simultaneously, it reinforces the need for deeper change in cultures and alignment of values and practices across levels of the university in order to achieve enduring institutional transformation.

Literature Review

To inform this case study, we draw upon two related bodies of literature. First, we review change initiatives that address gender inequity in advancement of STEM faculty. We then turn to promotion reform efforts that center on valuing multiple forms of scholarship, which is one means of addressing gender inequities.

Change in promotion systems for gender equity in STEM

Feminist scholars have made links between the differential valuing of research, teaching, and service, gendered division of labor, and gendered institutions [4] [17]. Studies have shown that in comparison to men, women academics spend more time on teaching, mentoring, and service and less time on research [18] [19] [20].Women also are more likely to use student-centered teaching practices [21] [22]. Moreover, women show greater commitment to community service in their faculty roles [23] and are more likely to pursue service as scholarship [24] [25] [26]. Park notes that some responses to this gendered division of labor problematize women [17]. For example, women are often advised to become better at saying no to service requests in order to prioritize research. She argues that such advice reflects sexist attitudes pervasive in our society that undervalue nurturing tasks (child rearing, teaching, advising, mentoring) and communal service tasks (departmental and institutional service) often undertaken by females. Moreover, Park argues that this masculine perspective underlies the hierarchy in how categories and sub-categories of faculty work are weighted in promotion, tenure, and salary decisions. For example, more "pure" scholarship is given more status and rewards: theory over application, quantitative over qualitative, publishing over presenting, academic audiences over public audiences. In addition, work associated with students is devalued, and service to national organizations, conferences, or journals carries more weight than university or community service [17]. Ultimately, Park argues for redefining and assessing scholarship as a way for universities to value women and fairly evaluate their contributions.

Regardless of the values inherent in promotion systems, studies show that ambiguity in policies and processes is common and has disproportionately negative effects on women. Policy documents often lack clarity about the timing for promotion to full professor, promotion criteria, standards, and how work should be documented [27]. Departments and institutions generally are clearer about the *sources* of documentation for faculty performance quality than they are on the criteria or *indicators* of high quality [27]. Research in social psychology suggests that when evaluation criteria are ambiguous, decisions are more likely to be influenced by personal and social characteristics such as gender and race, and those with majority group characteristics tend to be judged as superior [28] [29] [30] [31]. Documents may also fail to capture actual practices or provide information that faculty find meaningful or useful [32]. In a study at one research university, STEM faculty reported that the documents played little role in fostering their advancement toward tenure or promotion or understanding how their work would be evaluated, because of their lack of specificity [32]. How policy documents actually get interpreted and implemented often must be discovered through social networks, yet women tend to have less access to such networks than men [6]. In interviews with STEM faculty at another research university, Fox and Colatrella [7] found that women were less certain than men about which contributions, activities, and achievements would count for promotion from associate to full.

In response to identification of these systemic issues, in 2001 the National Science Foundation launched Institutional Transformation grants as a new initiative in the ADVANCE program. Research planning grants and career advancement grants supporting individual women were phased out, and greater emphasis was placed on systemic change within academic institutions [33]. From a review of 37 ADVANCE institutional transformation initiatives from 2001 to 2008, Morimoto and coauthors argued that creating equity in gendered organizations must go well beyond articulating policy, beyond attending to the needs of individuals, and beyond working toward balanced gender composition among the ranks of faculty, all of which they characterized as surface-level work [5]. In contrast, creating equity requires attention to deeply embedded gendered cultures and images of ideal faculty, cognitive schemas, and other mechanisms that produce inequality. In particular, the authors called for ADVANCE programs to be more systematic in promoting alignment across the individual, department, and institutional levels, including accountability and transparency in the common goals they pursue [5].

Valuing multiple forms of scholarship in faculty reward systems

One potentially powerful approach to driving systemic change is the adoption of multiple forms of scholarship. In *Scholarship Reconsidered: Priorities of the Professoriate,* published in 1990, Ernest Boyer argued for a broader vision of scholarship in the academy in order to better serve students, institutional missions, and civic life. This broader vision would fully harness the "mosaic of talent" and creativity among faculty and foster faculty engagement across the span of academic careers [3]. He proposed a model for faculty work comprised of the scholarships of discovery, teaching, integration, and application, and several years later, the scholarship of engagement. These ideas were extended by others in *Scholarship Assessed* [34], which suggested common criteria by which all forms of scholarship could be evaluated.

Scholarship Reconsidered and *Scholarship Assessed* triggered multiple national initiatives including the American Association of Higher Education Forum on Faculty Roles and Rewards [35] and the Carnegie Academy for the Scholarship of Teaching and Learning [36], among others. Inspired by Boyer's work, hundreds of institutions modified their promotion and tenure policies and put other structures in place in an effort to recognize and reward multiple forms of scholarship [15].

Scholars investigating the adoption of reward systems centered on multiple forms of scholarship have found benefits at many institutions. In a case study of four institutions that had redefined scholarship and reformed their promotion policies using Boyer's model, O'Meara found that each experienced a "slightly more balanced" reward system, increase in faculty engagement in non-discovery forms of scholarship, and increased faculty satisfaction with their work life [24]. In a survey of more than 700 Chief Academic Officers (CAOs) at a range of four year institutions in 2001-2002, about two-thirds reported having made changes in the last 10 years to encourage and reward multiple forms of scholarship [37]. Within that reform group, 76% reported that they had expanded the definition of scholarship used in faculty evaluation policies. In comparison to the traditional group, the "reform CAOs" perceived significantly higher levels of support among their faculty for broader views of scholarship [37].

Yet scholars have also identified many barriers to the reform process [24] [37] [38] [39]. The higher value placed on the scholarship of discovery compared to application, integration, and teaching seems persistent in both practice and culture [16]. One barrier is graduate school training, which socializes future faculty toward traditional definitions of scholarship that remain deeply held: that scholars create new knowledge for academic communities and demonstrate their expertise in writing; and that discovery research is harder and requires more expertise than teaching or service [24] [37]. In a multi-institutional case study of reform institutions, O'Meara characterized a "culture war" around decisions about promotion to full professor, wrapped up in institutional self-image and values of prestige associated with traditional scholarship [24]. Ratcheting up of research expectations to improve rankings has also been identified as a significant barrier [37]. In addition, CAOs have reported difficulty in expanding consistent definitions of scholarship across the university. They perceived that the level of support for an expanded definition of scholarship was lowest among faculty in the natural sciences compared to those in the social sciences, humanities, and in professional schools. In addition, they perceived that senior faculty were less supportive than mid-career and junior faculty [38]. All of these barriers lead to a common gap or disconnect between espoused and enacted promotion policies. Based on experience in the Research Universities Consortium for the Advancement of the Scholarship of Teaching and Learning, Shapiro noted that "faculty handbooks abound with innovative promotion and tenure policies built around a broad view of scholarship. [39]" Yet during actual reviews, traditional expectations often remain unchanged: for external funding, publications in top-tiered journals, and national reputation among a disciplinary research community.

In summary, this review has identified a common lesson learned from Boyer-inspired promotion reform efforts and gender equity initiatives in STEM: the need to move beyond policy articulation to address policy enactment, institutional practices, and deeply embedded academic norms and cultures. In the following sections, we present findings from efforts at WPI to introduce a new promotion policy that defines and recognizes multiple forms of scholarship. In particular, we examine WPI's early efforts to extend beyond policy reform and engage in the deeper work of advancing meaningful and sustainable institutional change.

Case Background: Development of a New Promotion Policy at WPI

Prior research on Boyer-inspired promotion reform efforts shows that catalysts and barriers have varied widely by institutional type and context [38]. Therefore, we begin by describing the institutional context at Worcester Polytechnic Institute. WPI is a medium-sized research-intensive, STEM-intensive private university. In the 2018-19 academic year, there were 420 full-time faculty, 4600 undergraduates, and 2200 graduate students [40]. WPI has a 50-year history of a project-based undergraduate curriculum, a signature Global Projects Program, and recognition for balancing research and teaching. Guided by the most recent strategic plan, extramural funding increased by 60% between 2015 and 2019 [41].

The primary catalyst for change in the Associate-to-Full promotion system was faculty dissatisfaction, revealed by survey data [42]. Dissatisfaction was particularly acute among tenured Associate Professors, women, and teaching-track faculty. (That dissatisfaction did not extend to the tenure system, and the tenure system is not addressed in this paper.) Promotion

reform was not a top-down or externally driven initiative. Rather, efforts to change the promotion policy were driven at the grass-roots level by the faculty governance system. Focus groups conducted by a task force revealed dissatisfaction about the following: 1) the disproportionate weight placed on traditional measures of research and the undervaluing of teaching and service; 2) lack of policy clarity; and 3) lack of mentoring for Associate Professors. Details of the policy negotiation process have been published elsewhere [14].

WPI's smaller size and relatively flat organization presents fewer structural barriers to promotion reform and institutional change compared to many other doctoral/research universities. The Associate-to-Full promotion policy is uniform across the university, and a single promotion review committee makes recommendations to the Provost. None of the schools (Engineering, Arts and Sciences, Business, Global) or their constituent departments has their own policy or formal review committees for the Associate-to-Full promotion. Moreover, all members of the university promotion committee who vote on any particular case are outside the candidate's department. However, the nominator is usually the department head. The nominator and an additional "advocate" chosen by the candidate serve as non-voting members of the committee to put the candidate's case in the context of their discipline and type of scholarship.

Key features of the new Associate-to-Full promotion policy are as follows:
- Candidates must demonstrate "high quality teaching and high quality scholarship/creativity as well as a record of scholarly contributions that demonstrates a positive external impact… Service is a critical responsibility of all tenured faculty; thus, evidence of service at a level appropriate to the rank is expected… Contributions to WPI may demonstrate an external impact if they are disseminated and recognized externally."
- It endorses an inclusive definition of scholarship and identifies characteristics common to all scholarship: public, amenable to critical appraisal, exchanged and used by other members of a scholarly community. The scholarships of discovery, integration, application and practice, teaching and learning, and engagement are defined. The policy states that contributions may be in one area or across multiple areas, and that all areas are valued equally. Scholarly contributions may combine or cut across traditional categories of teaching, research/creativity, and service.
- A teaching portfolio is now a required element of documentation, along with CV, personal statement, and sample scholarly artifacts. In addition to a citation index, candidates are invited to include other indicators of external impact appropriate for their work, such as downloads, reviews, and press and media coverage.
- Drawing on *Scholarship Assessed* [34], standards to evaluate quality across diverse areas are identified: clear goals, adequate preparation, appropriate methods, significant results, effective presentation, and reflective critique. The policy states that the standards for external impact should be appropriate to the area of scholarship and implies that number of refereed publications, number of citations, and level of external funding may not be important indicators for all scholarship.
- The policy states that peer reviewers should be experts in the area of the candidate's scholarly contributions and may include experts outside the academy if appropriate.
- Evidence about biases that influence faculty evaluation are enumerated, including gender and racial biases in addition to choice of area for scholarly contributions. Reviewers are asked to limit opportunities for bias to influence their assessment of the case.

In addition, some procedural changes were made. Promotion committee election procedures were modified in ways intended to promote more diversity among the members. Whereas previously the candidate's nominator and advocate were present for only one of two meetings assessing the case, they are now present for all discussions in an effort to increase fairness and transparency.

In the first three years under the new promotion policy, many more Associate Professors have applied for and been awarded promotion to Professor compared with the three years prior, as shown in Figure 1. In addition, the number of women promoted increased four-fold. Although we are not yet able to categorize promotions into different types of scholarship, the promotion announcements have highlighted patents and technology commercialization, development of apps, and industry-sponsored work in addition to fundamental research. In addition, the announcements have highlighted instructional YouTube channels, educational program building, innovation in engineering education and growth of the global projects program, external workshops on project-based learning, publication of a book about project-based learning, and development and leadership of first year interdisciplinary, project-based courses. These education-related scholarly contributions were made by four women and one man.
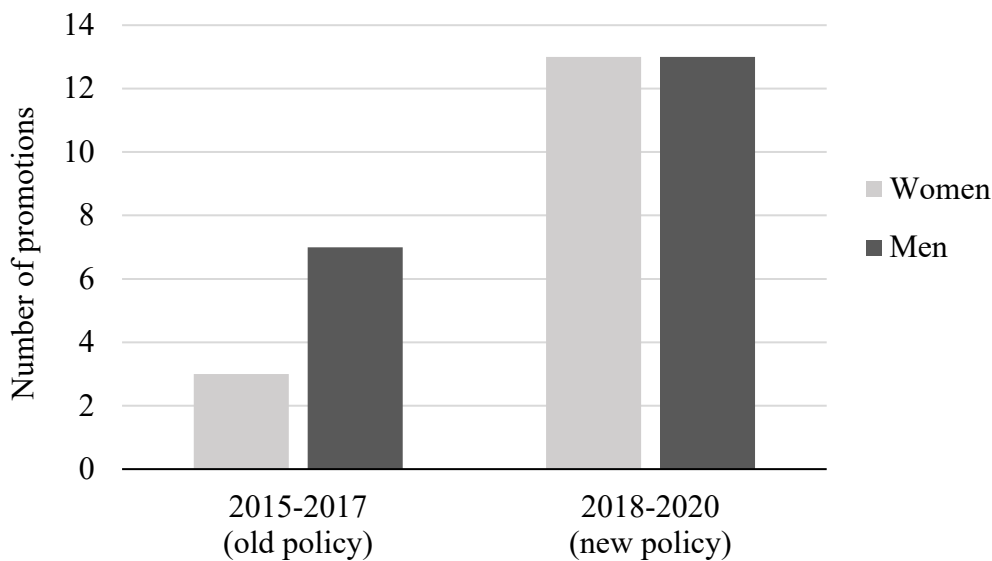

Figure 1. Number of promotions from tenured Associate to Full Professor, by gender, three years before and three years after a new promotion policy that welcomes multiple forms of scholarship.

Understanding the need to move beyond articulating policy to create greater alignment between values, cultures, and practices in different levels of the organizations and among a range of stakeholders, a group of women faculty self-formed with support of senior leadership to submit an ADVANCE Adaptation grant and lead the ongoing change effort. The project includes three areas: 1) policy and process clarification for both tenured and teaching-track faculty; 2) creation of a mentoring and professional development system for all full-time faculty at the Associate

rank; and 3) bias awareness and mitigation. While these areas are interdependent, the rest of this paper focuses primarily on policy clarification work for tenured faculty.

Implementation Process

Despite what most would characterize as early success, many questions and concerns remain about understanding, implementing, sustaining, and institutionalizing the new promotion policy. Organizational change scholars often identify three stages in an organizational change process: mobilization, implementation, and institutionalization [43] [44]. The activities of WPI's NSF Adaptation grant address both implementation and planning for institutionalization. "Institutionalization" has occurred when innovations or "special projects" are routinized and legitimized at three different levels: structural, procedural, and cultural. When change has been integrated in the culture of an organization, there is alignment between practices, values, and attitudes, and the innovation is owned by the organization's community rather than by people in particular positions [44].

Figure 2 shows an overview of the process used in the first year of the grant to continue policy implementation work. The work began with an external audit of the new promotion policy and other documents using an evidence-based rubric that assesses clarity, transparency, awareness of context, flexibility, accountability, and signals of values and principles such as inclusion, equity mindedness, and desire to mitigate bias [45]. The audit was conducted by a national expert on faculty reward systems and multiple forms of scholarship. This expert also visited campus to facilitate a workshop on remaking promotion for clarity, transparency, and impact. Attendees included members of the working group (described below), promotion committee members, Provost and Deans, department heads, and the grant leadership team. In addition, the expert engaged attendees in a case study to evaluate a real example of community-engaged scholarship.

The grant leadership team recruited a summer working group to act on a subset of the audit results and workshop principles. The composition of the working group was designed for diversity across stakeholders, disciplines, and genders. The group of eight (three women, five men) included two promotion committee members, a governance committee member, two department heads, two Associate Professors, and a Professor promoted under the new policy. One member of the grant leadership team facilitated the working group. Another member of the leadership team conducted interviews with Associate Professors and recently promoted Professors during the summer and passed along emergent themes related to policy and processes.

Outcomes to Date

The audit identified so many areas for improvement that the grant leadership team decided to take a staged approach and ask the working group to focus on a small number of "early wins," particularly creating resources that could be used to educate a range of stakeholders about multiple forms of scholarship and how they would be evaluated.
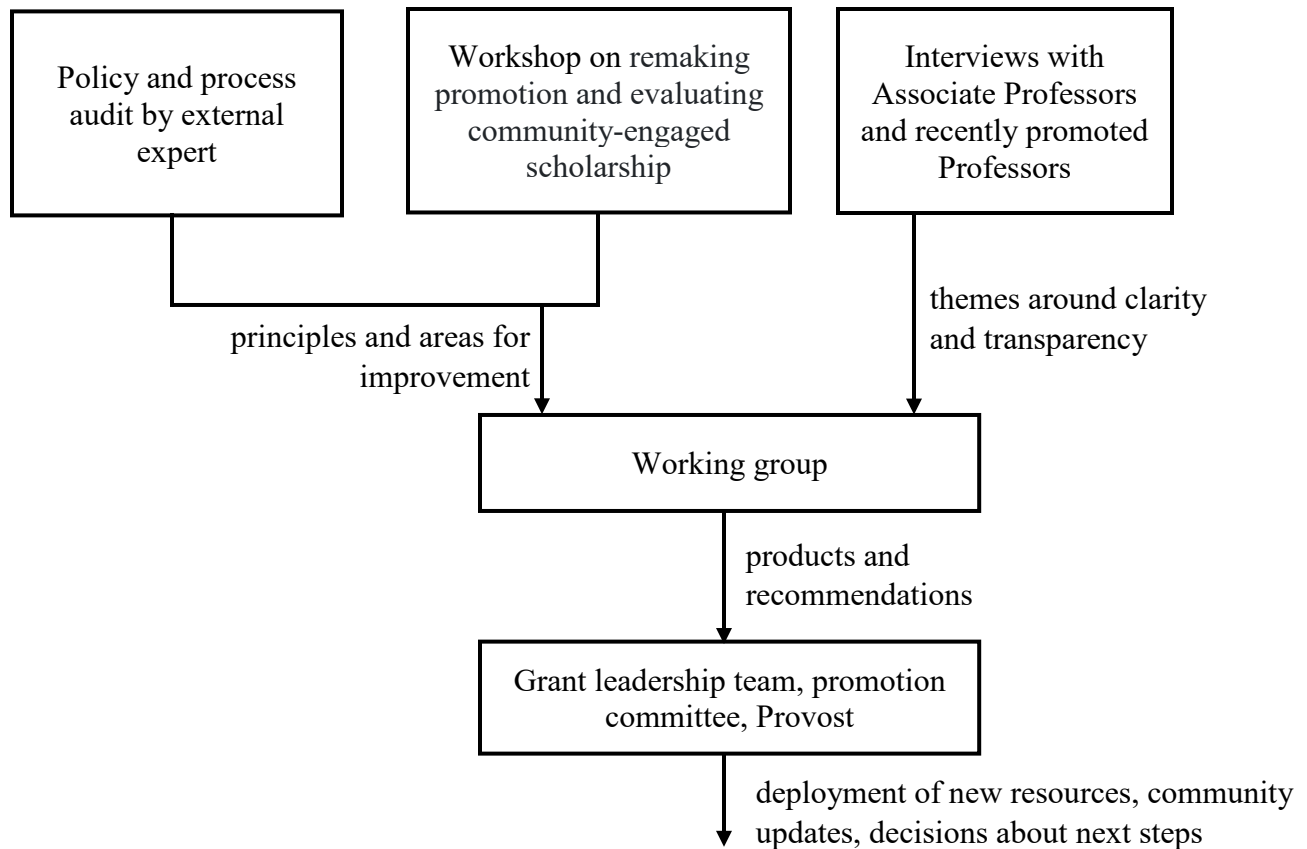
Policy and process audit by external expert

Workshop on remaking promotion and evaluating community-engaged scholarship

Interviews with Associate Professors and recently promoted Professors

principles and areas for improvement

themes around clarity and transparency

Working group

products and recommendations

Grant leadership team, promotion committee, Provost

deployment of new resources, community updates, decisions about next steps

Figure 2. Policy-related activities undertaken by stakeholders and outcomes of those activities to date.

Offering examples of successful dossiers

As an early win, the working group decided to curate and make available a collection of successful promotion dossiers. Promotion committee members on the working group solicited permission from a sample of successful promotion candidates with scholarship in a range of areas. Interviews suggested that Associate Professors might be overwhelmed by all of the variation in dossiers—how personal statements are organized, for example. They were interested in knowing what resonated with the promotion committee and Provost. Ultimately, the working group members prepared a guide, explaining how each dossier demonstrated scholarly contributions with positive external impact.

Clarifying interpretation of high quality

The external audit confirmed a common problem in promotion policy documents: that *artifacts or products* of scholarship and teaching were identified without directly communicating the metrics or indicators by which those products would demonstrate high quality [27]. As explained earlier, those conditions make it more likely that biases will enter into evaluation. To address this, the working group drafted a matrix for evaluation of scholarship, indicating not just

products and artifacts, but evidence of quality as well as impact, drawing on existing resources for evaluating the scholarship of teaching and learning [46] and scholarship of engagement [47] [48]. Whereas the audit recommended identifying what does and does *not* count as scholarship, thus far the materials drafted by the working group identify a range of possibilities and conditions for what *does* count. The group also recognized the need to give as much attention to the evaluation of teaching as to the evaluation of multiple forms of scholarship. They modified existing rubrics for evaluating teaching portfolios [49] [50], adding elements for WPI's project-based teaching context. The working group attempted to use six standards of high quality articulated in *Scholarship Assessed* [34] as a common thread connecting assessment of quality in teaching and scholarship.

Wrestling with how to value service

The consideration of service still seems problematic. A strong theme in interviews with Associate Professors and recently promoted Professors, many of them women, revealed the desire for more clarity and differentiation of the many levels of activities that might be placed in the "service" category. While recognizing that some service could be pursued as scholarship, even in the absence of external dissemination they wanted to see leadership of innovation and change clearly given more weight, as compared to routine service. In addition, some identified *high quality* service as a type of hidden work. For example, if they want their participation on a department or university committee to have real impact, they do more work outside of meeting times. However, not all committee members make the same commitment. Those distinctions between service "duty" and "contribution with impact" do not seem to be acknowledged in current policy and practices.

Clarifying roles and leveling the playing field

By the end of the summer, the working group had articulated a much larger set of policy and process clarification needs and education needs, moving well beyond an understanding of how to document and evaluate various forms of scholarship. In fact, the group ended up identifying a majority of issues and areas for improvement identified by the external audit. For example, inclusion of department heads in the working group revealed differences in knowledge regarding expectations and best practices in their roles as nominators, along with the roles of advocates. For these needs and more, the working group recommended the contents of a comprehensive guide for promotion to Full Professor (see Table 1), with sections for the full range of stakeholders including Associate Professors and their mentors, nominators and advocates, and promotion committee members. While some of this information has been available on the committee's website, it is divided into multiple documents with minimal organization. The intent of the guide would be to organize that guidance, fill in gaps, foster alignment across stakeholder groups and levels of the organization, create more transparency, and "level the playing field" by making the same comprehensive information available to all, lessening reliance on social networks. While the guide is intended to provide useful information not found in policy documents, the working group understood that it would not be enough. They wanted to see more care taken to ensure that external reviewers apply WPI's criteria and standards rather than their own. The working group also recommended changes to the annual information meeting that the committee hosts for Associate Professors. Another recommendation was to establish annual

Table 1. Promotion to Full Professor: A Guide for Key Stakeholders (working draft)

Preface: Annual letter from Provost and Committee on Appointments & Promotions (COAP)

A. Overview of Promotion Process and Roles of Key Stakeholders

    1. Process diagram and annual timeline of deadlines and notifications

    2. Roles of nominator and advocate

        a. What's the difference between the nominator and the advocate?
        b. Identifying and soliciting external reviewers
        c. Writing the nomination letter
        d. Preparing for meeting 1: Translating the candidate's field and scholarship
        e. Preparing for meeting 2

    3. Roles of COAP members

        a. Committee timeline for promotion cases
        b. Responsibilities of the tracker for each promotion case

    4. Valuing diversity and mitigating bias in faculty evaluation (brief statement)

B. Rubrics for Evaluating Promotion Dossiers

    1. High quality teaching

    2. High quality scholarly contributions with external impact (multiple forms)

    3. (High quality?) service

C. Guide for Associate Professors and their Mentoring Teams

    1. Working toward promotion over time

        a. Creating a mid-career vision and professional development plan
        b. Forming and utilizing your mentoring team
        c. Strategies for building external impact and visibility
        d. Engaging in collaborative scholarship
        e. Maintaining the COAP-format CV and teaching portfolio

    2. Timing: When are you ready?

    3. Choosing your nominator and advocate

    4. External reviewers and professional associates: What's the difference and how do you choose professional associates?

    5. Preparing the promotion dossier

    6. Sample dossiers

    7. The aftermath: What if you get turned down?

D. Appendices

    1. COAP-format CV template

    2. Link to promotion policy in Faculty Handbook

    3. Letters sent to external reviewers and professional associates

    4. Survey sent to former students

orientation/training for the promotion committee, nominators, and advocates, to improve bias literacy and to practice applying rubrics to evaluate teaching and multiple forms of scholarship.

Next Steps Toward Institutionalization

The grant leadership team is planning another cycle of summer working groups to complete work on the guide to promotion and to test and refine rubrics for evaluation of high-quality scholarship, teaching, and service. Once again, the groups will include key constituencies such as promotion committee members, department heads, and associate and full professors with a range of scholarly interests. Groups will also be asked to consult with and incorporate feedback from the Provost and Deans in order to build alignment across levels of the organization. Importantly, the next phase of work will also include pilot activities for a range of stakeholders to address biases about the status and legitimacy of non-discovery forms of scholarship and other biases in faculty evaluation.

Many questions remain about authority and accountability to implement and institutionalize the working group recommendations. Who will be accountable for regularly updating the Guide to Promotion and sample dossiers, and what process should be used? After conclusion of the ADVANCE grant, who will be responsible for annual orientation and bias training for the promotion committee? At present, WPI does not have a faculty affairs position or office. Instead, that type of work has been handled by faculty governance committees in collaboration with the Provost. Community members have also expressed concern that the early positive outcomes of the new policy could be eroded during the next transition to a new Provost or President, with expectations becoming a moving target. Strategies to mitigate this possibility include careful attention to institutional values, policy, and practices in recruitment and search processes as well as onboarding and orientation for new academic leadership.

Thus, further work lies ahead to institutionalize and internalize change in the Associate-to-Full promotion system at WPI. This work will be done through ongoing engagement with department heads, embedding team members and diverse faculty with non-traditional scholarship in key governance committees, and developing robust accountability measures for all parties. In sum, all of this work aims to support enduring institutional changes that will lead to better recognition and advancement of all faculty.

Acknowledgements

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