

YEAR ONE EXTERNAL EVALUATION

RENSSELEAR POLYTECHNIC INSTITUTE

NSF AWARD #0548354

ADVANCE INSTITUTIONAL TRANSFORMATION AWARD:

**RAMP-UP: REFORMING ADVANCEMENT PROCESSES THROUGH
INSTITUTIONAL TRANSFORMATION**



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NSF award #0548354 - ADVANCE Institutional Transformation Award:

Ramp-Up: Reforming Advancement Processes through Institutional Transformation

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This first year evaluation report describes and examines the implementation of the RAMP-UP Project through NSF indicator data and faculty interviews.

Durland Consulting wishes to thank Elizabeth Carrature for her excellent help in facilitating the interviews schedules and processes during the site visits on December 11-13, 2007. We appreciate the time and openness given to us by every person we interviewed.

Executive Summary

Summary

This document presents the first year external evaluation of the Rensselaer NSF ADVANCE IT project, Ramp-Up (Reforming Advancement Processes through Institutional Transformation) funded in October of 2006. The evaluation covers the period from when the project was funded through December 2007.

The goal of Ramp-Up is to reform university advancement processes to increase the participation of women in the senior ranks, particularly in science and engineering. Ramp-Up was designed to address the systemic issues that facilitate or obstruct advancement processes at all system levels: the department, school, and university.

During the first year of funding, the Ramp-Up project conducted several events and initiated multiple activities designed to address their goal. Overall, the project has been met with positive, supportive responses from faculty and administration. The project leadership is well respected, highly valued, and well connected throughout the university.

Ramp-Up is about promotion and tenure for women at Rensselaer and has already made significant inroads towards reaching their goals, due both to effort and RPI state of affairs. For example, related to the state of affairs:

- The project has the critical support of the University President, Shirley Ann Jackson who was hired to lead RPI through a major development initiative.
- The project has the critical support and leadership of the new Provost, Robert Palazzo.
- The project has the critical support and input of the Deans.

Related to effort

- The project leadership has been able to create a strong core of collaborators across the university, who will contribute to and engage in the project with passion, voice, respect, and intent.
- For the first time, comparative gender specific information about salary has been made available to the faculty.
- Several first year events and activities have met with success.
- There is an increased awareness of the issues that particularly influence the advance of women,
- There is also a clearer understanding that though women may have brought attention to these issues, many are systemic in nature and gender neutral.

RPI is a complex organization and as such has multiple levels of issues related to the promotion and tenure of women. There is also a complex multi-level, disarray of cultural landscapes. There is no one clear path for attaining promotion and tenure; and faculty work to attain promotion and tenure within this mélange of cultural landscapes.

The primary goals of the evaluation were to explore the processes of Ramp-Up and provide a baseline framework for measuring future changes and successes towards cultural transformation and increased advancement of female faculty. The four process questions were intended to explore and document culture transformation, and were:

1. What changes are taking place in the working relationships of departments? Across the university?
2. How do faculty members view the project components? Do they perceive Ramp-Up activities as affecting the culture of their department? Of the university?
3. Are female faculty members reporting changes in the mentoring they receive?
4. Are there changes in how female faculty members view their possible career trajectories at RPI?

We conducted 27 interviews with a variety of faculty and administrators over a three-day site visit. This resulted in over 12,000 text units and almost 800 pages of text. Based on the analysis of the interviews, document analysis of materials on the website, and the NSF indicator data provided by the project, we reorganized the four evaluation questions into a more logical order based on moving from larger themes to components that are more specific. We will present our findings and discussions in the following order. The first focus will be on culture, then on working relationships, a review of how faculty members view the project components, followed by findings that are more specific to mentoring and then ending with findings on career paths trajectories. We will follow the same outline in the technical report, which will provide more discussion around each of the questions.

Findings

Culture

In interviews, we found that when respondents spoke of the impact of Ramp-Up, they were more likely to speak of the presence of the project overall than of specific events. In regards to the project overall, the comments were overwhelmingly positive. Every respondent in our sample expressed in some way that the project held the real potential for positively affecting the advancement of women at RPI. It is notable that no skepticism was expressed about a project tackling a long-standing institutional difficulty.

When talking about change that had occurred so far through Ramp-Up, respondents often talked about an increased awareness of the issues women faculty faced.

As mentioned previously, there was evidence of great trust in the project leaders, Cheryl Geisler and Debbie Kaminski. The positive comments about Ramp-Up were often grounded in respect for the project leaders and the beliefs that the advancement of women is an important issue to address.

Working Relationships

While some departments are very strongly connected, there are not systematic mechanisms for collaborative work. Several respondents spoke of the lack of common

space, saying there is no one location for faculty to meet on campus either for lunch or to work across departments or even see individuals from other departments.

It appears that Ramp-Up has provided an awareness of the impact of not having common overlaps and tools to help departments create structures for addressing these issues. Ramp-Up itself has been a model for disseminating information across the university through faculty meetings, emails, and personal connections.

Departments have appeared to be very receptive to Ramp-Up, particularly at the Dean level. The interviews gave evidence of some of the ways that departments are creating structures for developing working relationships and increasing communication with some departments using the departmental change grants as an incentive.

Mentoring

From our interviews, Ramp-Up appears to be having a positive impact on the mentoring received by women faculty. Respondents spoke of increased opportunities and avenues for mentoring as a direct result of Ramp-Up. Recipients of the Career Campaign Awards talked of having strengthened relationships with the mentors who paired with them on the grants. The university environment appears to be changing, with a new focus on the importance of mentoring.

The initiation of the role of faculty coaches appears to be one of the most successful components of Ramp-Up. The coaches have been highly proactive, contacting many faculty members to offer assistance. All our faculty respondents who had contact with coaches spoke positively of the coach, and viewed the coaches as valuable sources of information. The coaches were very carefully selected by Ramp-Up staff, and the process appears to have worked well.

As the role of mentoring expands at RPI, so will the need for information on mentoring. Senior faculty will need information on how to mentor; junior faculty will need information on finding appropriate mentors.

Career Paths

The impact of Ramp-Up so far is promising, particularly on the awareness of the status of women at Rensselaer and opportunities for mentoring and increased information on promotion and tenure. In the design of Ramp-Up, these factors are expected to have an impact on career paths.

The evaluations findings suggest that contextual factors must be considered to encourage the success of Ramp-Up on changing women's career paths, including:

- The level of trust at RPI
- The continuing clarification of the P&T process
- The high demand of obtaining funding for science careers
- Attention to the hiring process to ensure that women faculty are brought on board for core research and leadership positions

Recommendations

Promote the transition from associate to full professor in project components. As the indicator data clearly show, currently women faculty at RPI are not transitioning to the status of full professor at the same rate as men, and changing this is a central aim of Ramp-Up. Paradoxically, one of the current positive changes for women at RPI, an increase in the proportion of new hires who are women, may pull attention away from the mid-career stage. The new hires offer the possibility of a strong cohort in the tenure process, and may tend to focus advancement discussion on this career stage. This may be occurring particularly in regards to mentoring, which is seen as integral to early career advancement processes.

To address the issue of transition to full professor, we suggest a targeted approach that might be termed ‘mid-career mentoring’. Two successful existing components of Ramp-Up, the faculty coaches and increased advocacy, could be used. In a process similar to initiating interventions, it may be worthwhile to send out a general notice offering services to female faculty who are considering the process of advancing from associate to full. Faculty coaches and advocates could then support that process, and, if appropriate, help build network between women at this career stage. The general notice approach would also serve to further inform the campus community about this issue, continuing Ramp-Up’s effect of “shining a light” on women’s issues at RPI.



Continue research on advancement issues. The analyses carried out by Ramp-Up staff on the status of women at RPI have provided a solid foundation of data supporting the program; research should be continued to further clarify issues and deepen understanding.

The indicators work being carried out by Ramp-Up staff is excellent; we recommend that measurement of the distribution of resources to faculty be expanded to include mentoring and support. The social network analysis (SNA) underway may help provide such measures. The cohort analysis underway will also provide valuable information.

We also strongly recommend that research be carried out to explore the rate of attrition at the university. In particular, it is important to contextualize the attrition by comparing it to rates at similar institutions, and to determine why men and women at RPI leave at different career stages and if their reasons for leaving are different.



Promote an understanding of and options for a mentoring network. Through the initiation of the faculty coach position and other efforts, Ramp-Up has expanded the options for mentoring at RPI. We recommend that Ramp-Up continue to promote an awareness of mentoring options, and the importance of building a mentoring network for information and support, rather than defining mentoring through a single relationship. Part of the process of building mentorship throughout RPI may be to share the knowledge

base among mentees: knowledge about seeking mentors, and maintaining useful mentor relationships. Mentees need to be talking with each other.

Expanding options does not mean casualness about the process of mentoring. In particular, we recommend that the extensive review process be used to select faculty coaches continue to be used if the role is expanded.



Future work: the establishment of a center to deal with advancement issues The evaluation findings support the concept of establishing an RPI center studying and disseminating information on promotion and tenure for all faculties, with a focus on women. The findings that support this are:

Further data and dissemination will continue to call attention to the need for and to stimulate support for mechanisms to bring equity to the advancement of women.

Information on the P&T process at RPI is currently unclear, and must be clarified for Ramp-Up to succeed, and for the benefit of all faculties.

Factors external to Ramp-Up appear to be impacting career paths at RPI, such as managing the high demand for funding for science research. Gathering data and planning responses to such factors will be important to career advancement.



Technical Report

YEAR ONE EXTERNAL EVALUATION

RENSSELEAR POLYTECHNIC INSTITUTE

ADVANCE INSTITUTIONAL TRANSFORMATION AWARD #0548354

RAMP-UP: REFORMING ADVANCEMENT PROCESSES THROUGH

INSTITUTIONAL TRANSFORMATION

Introduction

ADVANCE

ADVANCE: Increasing the Participation and Advancement of Women in Academic Science and Engineering Careers is a funding area supporting one of the National Science Foundation's (NSF) strategic goals. The goal is "to cultivate a world-class, broadly inclusive science and engineering workforce, and expand the scientific literacy of all citizens."¹ ADVANCE projects are funded to create "systemic approaches to increase the representation and advancement of women in academic science and engineering careers, thereby contributing to the development of a more diverse science and engineering workforce."²

One of the programs funded under ADVANCE is the **Institutional Transformation (IT) Awards**. These awards focus on institution-wide change and activities for promoting the participation and advancement of women scientists and engineers in academe.

Rensselaer Polytechnic Institute received an award in the third round of funding under this ADVANCE program. Some programs, such as those at Georgia Tech, have completed their five-year project, which began in 2001. There were nine universities in the first round of funding, ten in the second, and thirteen in the third, which includes Rensselaer. Rensselaer's funding cycle will be somewhat different from previous funding cycles for previous rounds, as RPI will have a shortened period of implementation time before their first NSF review, which usually occurs in the third year. This review will occur for RPI in the second year of funding. This means a far more condensed planning, development and implementation period. This document details the first year external evaluation of the Rensselaer project, Ramp-Up - Reforming Advancement Processes through Institutional Transformation funded in October of 2006.

Ramp-Up

The goal of Ramp-Up is to reform university advancement processes to increase the participation of women in the senior ranks, particularly in science and engineering. Ramp-Up - Reforming Advancement Processes through Institutional Transformation was designed to address the systemic issues that facilitate or obstruct reform including advancement processes at all system levels: the department, school, university, and professional.

The original focus of Ramp-Up was on promotion to full professor. The project developers had decided to focus on the promotion advancement processes for faculty rather than increasing graduates or the recruitment and hiring processes. There were several reasons why Ramp-Up chose this focus. First, this is where the interests of many

¹ ADVANCE Synopsis http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5383&from=fund Last Updated: October 4, 2007. Accessed October 25, 2007

² Ibid

women were and second there has been what one interviewee described as “an undercurrent of knowledge and what information was really important to support change.” RPI has had a strong cadre of women over the years, who have met informally to share information, identify issues and to meet socially. At other times, this group of women have identified needs and formally addressed them, with senior faculty leading the way for junior faculty. At one time, there were only eight women on the campus and currently women faculty account for only 20% of tenured and tenure track faculty (N=364). These women have constructed a means of connecting for themselves. Women have never had a strong presence on campus.

The first women students on campus were admitted in 1943. These women were trained as engineers and technicians to supplement the Curtiss-Wright Corporation’s (an aircraft manufacturer), technical staff. The 90 or so "cadettes", as they were called, were math and science students recruited from top universities. However, it was not until the mid 1960’s that RPI began addressing the issues necessary to be a co-educational institution and begin to promote this status.

Herta Leng, a past Rensselaer professor of physics, became the first woman named a full professor at Rensselaer in 1966. Dr. Shirley Ann Jackson (1999 to the present) becomes Rensselaer’s first female president.

RPI had submitted proposals for ADVANCE grants previously, which were not funded. The lead principal investigator reviewed past proposals and decided to try again. She put together a team, which met frequently during the next two years doing preliminary research. From that research, the team became aware of data that indicated that there were women faculty at the Associate Professor rank who were not progressing to the rank of full Professor.

The team then spent time on additional studies and an extensive stratified sample survey. They “...learned that women on the campus were not being encouraged to apply for full professor; only one woman ever had been encouraged of the 14 people that we talked to; and we learned that the men were being encouraged and that they were being successful and women were not.” “That was the spur that got us moving in this direction, we wanted to break the glass ceiling at the next level.” From their investigations, another key fact was that women did not even know how to become full professors. The team also undertook the analysis of promotion patterns; this analysis guided the NSF proposal and a paper was later submitted for publication.

However, one of the project leaders noted that further research indicated “... the plight of the assistant professors was perhaps as difficult, if not more so, and that we hadn’t really won the battle at the tenure level.” What they found was that

“...for many years when women were coming up for tenure they were getting it; but, (some) seemed to be leaving before they ever came up for tenure, and sometimes this was anecdotally because they were following their significant others but other times it was clearly that they felt that they

weren't succeeding in this environment, that they weren't being supported and that they were leaving for that reason..."

When Dr. Jackson arrived and made the decision that there would be "...equity at this university..." the focus on diversity came to the forefront. Some deans mandated that fifty percent of their hires would be diverse, either women or under-represented minorities. As a result, those we interviewed indicated that they felt that the deans had been doing a good job at meeting those goals. One interviewee said, "And so not only do we have more women, we have something like six minority women assistant professors on the campus and it's just wonderful, and we have a lot of minority men on the campus as well."

In addition, from a comparison of other NSF ADVANCE projects, the team saw that Rensselaer already had policies in place, which other institutions were still working on initiating, such as a parental leave policy and even part-time tenure. The team learned from others and saw "...that policy wasn't going to be the solution, or at least the total solution. That you could get a policy kind of infrastructure in place but the last frontier was the culture."

The team thought that with both policies and strong leadership the last frontier of culture could be address and that "...Rensselaer was at the point where they could perhaps entertain that kind of change ..."

As an implementation focus, Ramp-Up addresses change though self-regulation not just policy. One of the principal investigators described it this way:

One of the focuses of this (project) is that the professions should be self-regulating, so if we're going to change the professoriate we have to do it from within. We have to get buy in from the full professors, both men and women, who are now in the power structure who say, "Yes, this has to change" and we've worked on that in this grant.

We have a lot of partners; our faculty coaches are strong partners with us to try to help things to change; and our department chairs, that's what the retreat is about, we want to bring them more into the equation of improving things and the department cultural change is about that too. So it's a matter of we don't feel that change should come from the outside society but from within the professions.

Ramp-Up developed four major initiatives to address the issues they had identified. Briefly, these are:

Pipeline Initiative – a department level initiative to create a new senior level position in Science and Engineering and to build a role for women faculty in leadership roles in these key departments at the Institute. Two departments are currently working toward finding a candidate for a Pipeline appointment.

Departmental Cultural Change Initiative – this will be a 2008 initiative, but is worth mentioning here. Four departments received departmental cultural change awards in October 2007 to implement in 2008, with measures of departmental networking as a measure of change. The four departments wrote proposals and these were evaluated by Ramp-Up. The grants that were funded illustrated a commitment of the department faculty, a probability of success with an effective plan, and indications that with better department cultures there would be the potential for improving the climate for women and minorities, and better probability for career advancement. Departments are just beginning the process of initiating these grants. Ramp-Up also had developed an introductory Tool Kit to help jump start the department proposal processes.

Career Campaign Awards – an individual level initiative to help women faculty build their career success and prepare for promotion to the next rank by working with a mentor on a specific project related to career advancement. Seven were funded during the first year.

Faculty Coach Positions – a departmental and school level initiative designed to provide a Faculty Coach position in key schools to assist women faculty in their career advancement by providing information, mentoring, and discussion. Ramp-Up funded two coaching positions. Selection of the coaches was an intensive process, with nominations made and reviewed by numerous faculty members. A third faculty coach position, still in the planning stages, is being funded by a Dean for their own school because they believed the value of the coach was so great.

Advocacy – an individual level initiative that supports women faculty in presenting cases for tenure or tenure review

Advancement Reform – an institute level initiative designed to work with a faculty team and the Provost to resolve disparities among departments in tenure and promotion processes, using the recommendations of the P&T committee at the Institute to provide global benchmarks for faculty performance goals.

Additionally Ramp-Up has supported several activities designed to increase faculty networking and to provide information. A Women's Retreat provided an opportunity for women to meet, talk, and work on common issues. Several hundred men and women attended or participated in events that included:

- The Mentoring Workshop
- The Life-work Balance Workshop
- Speed Networking
- Colloquy
- Women's Weekend Retreat

Rensselaer History

Stephen Van Rensselaer established The Rensselaer School in Troy, New York, in 1824 “for the purpose of instructing persons ... in the application of science to the common purposes of life.” Rensselaer has a long history and has been noted as being one of the first schools of science and school of civil engineering. They have had a continuous history, noted by an increased scientific focus and name changes. The Rensselaer school became the Rensselaer Institute in 1833 and a polytechnic institution in the 1850’s, and became Rensselaer Polytechnic Institute in 1861. The Institute is currently a technological university comprising five schools: Architecture, Engineering, Humanities and Social Sciences, Management, and Science.³

Academically, RPI has a reputation as both a teaching and a research university. However, this dichotomy has also led to deep organizational fissures. Clearly, RPI is a complex organization and as such has multiple levels of issues related to the promotion and tenure of women. First and foremost, what we found is that some of the concerns of women are not unique to just women. There are systemic issues with the promotion and tenure processes that affect a majority of individuals such as junior faculty or faculty more focused on teaching; there are specific school and/or departmental issues and there are issues that affect individuals on a one to one basis.

There are also historical patterns that have led to serious repercussions. Budgetary issues from the mid 1980’s until about six years ago led to low rates of new hired for that period. That has caused a shortage of faculty in the middle ranges, and resulted in very young junior faculty at one end and well-established senior faculty, many nearing retirement, at the other end. It has meant reconstructing processes such as collegial working relationships and departmental processes such as processes for applying for grants. It means that mentoring has an even more valuable role.

Another factor related to attaining a career path that leads to promotion and tenure is that the field of science and technology is changing and what funding is available is more difficult to attain, and may be directed towards ever changing areas. As Ramp-Up furthers the development of its project, a challenge it will have is that it will need to identify what specifically to address, at what level and how. Ramp-Up is already in tune with this, as illustrated in the development of the Department Cultural Change Initiatives.

One of the findings we noted throughout our interviews is the consistent respect and admiration the faculty and administration that we interviewed have for RPI. People choose RPI and choose to stay here. Even those few who would like to leave and who will leave, want to leave because of specific systemic cultural issues that have profoundly affected their careers.

³ More historical information about Rensselaer can be found on their website at <http://www.rpi.edu/about/history.html>

External Evaluation Plan & Framework

The major goals of the year one evaluation were to summarize data to date, provide a baseline framework to measure future changes and successes, and suggest and inform future external evaluation goals. The evaluation will provide both primarily a formative evaluation perspective.

Evaluation Questions

The external evaluation set of questions was developed to gather data on the process of Ramp-Up by exploring and documenting faculty perceptions of promotion and tenure issues and culture transformation at RPI. To develop those questions, we conferred with Ramp-Up principal investigators, and reviewed project documents and the evaluations of other ADVANCE grantees.

In reviewing other evaluations, our aim was to tie this evaluation, when appropriate, to larger themes found within the ADVANCE grants, thus helping to fulfill the NSF's purpose of developing models and information for transforming university culture in the sciences. For example, we found the study being conducted by the University of Colorado, Boulder for their project LEAP, to be very informative to the development of our interview questions under each of the evaluation questions. They are conducting a career path mapping study of a large sample of faculty.⁴

The Ramp-Up evaluation questions relating to process are:

1. What changes are taking place in the working relationships of departments? Across the university?
2. How do faculty members view the project components? Do they perceive Ramp-Up activities as affecting the culture of their department? Of the university?
3. Are female faculty members reporting changes in the mentoring they receive?
4. Are there changes in how female faculty members view their possible career trajectories at RPI?

To address these questions, qualitative data was collected through semi-structured interviews. The interviews were developed as a method for capturing the participants' perspectives on advancement and change and will provide a baseline for identifying evidence of change over time.

In the interviews, we asked questions across seven categories: participation in Ramp-Up (events, leadership and activities), personal career paths, future long and short term goals, a general picture of daily work, the types and level of support available and needed, work life balance concerns and issues, and thoughts about Ramp-Up. Additionally we

⁴ <http://www.colorado.edu/facultyaffairs/leap/research/index.html>

asked those in project leadership nine specific questions about the development and expectations for Ramp-Up.

Sample

The sample selected for interviews included individuals key to project implementation and primarily faculty members from the engineering and science disciplines (the areas of primary interest to NSF). A purposive stratified sampling scheme was used to select faculty members for interviews.

To create the sampling frame, we looked first at the entire faculty of RPI, and their distribution by gender, department and school, and participation in Ramp-Up activities. There were 364 tenured and tenure track faculty used to create the sampling frame. Of these, 72 or 20% were women. Of the women, 55 (76%) participated in at least one Ramp-Up event or activity, 10 (14%) did not participate in any Ramp-Up event or activity and 7 may not have participated in an event or activity, but were involved in the project though other ways such as being a cultural change leader, or on the Cultural Change Committee.

Thirty-four percent (N= 98) of men participated in at least 1 Ramp-Up event or activity and 25% (N=74) were involved indirectly in the project though may not have attended an event or activity. Overall, 65% of all faculty were involved directly (N=153) or indirectly (N=84) in Ramp-Up. Indirect participation means that some individuals may not have attended an event, but served on the pipeline committee, or the advisory committee, etc.

Chart 1 illustrates the distribution of levels of participation in Ramp-Up events and activities. For each gender, there are three levels of participation: participant, non-participant, and non-participant but involved in Ramp-Up Initiatives. For each classification, the percent by gender and the percent of total faculty are presented.

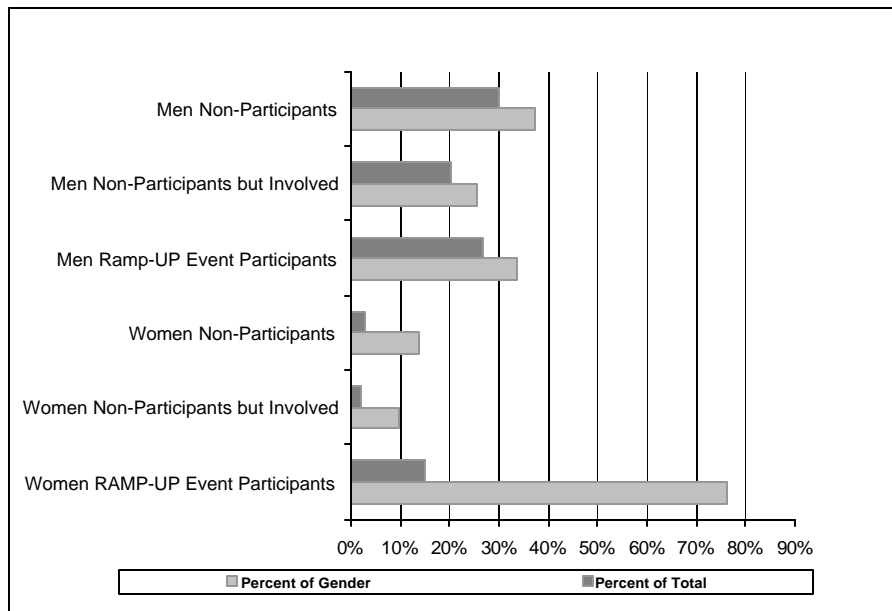


Chart 1. Levels of Participation by Gender

Some faculty indicated were not able to participate in specific Ramp-Up events or activities due to conflicts with work, family life or the timing of an event. Others, who could not participate, have been active in Ramp-Up initiatives in other ways. Participation could be classified as a variety of roles ranging from involvement in the development of the project to filling a specific position within the Ramp-Up Initiations.

For example, the Deans have provided development support on several initiatives such as the Cultural Change Grants; Deans, chairs and professors have provided support and encouragement in writing Career Campaign Grants, or acting on the Advisory Board or on the committees that selected the Career Campaign recipients. Other faculty have responded and provided mentorship to the Career Campaign recipients or have served on the department committees for the Cultural Change Grants or the Pipeline Searches.

Chart 2 lists the roles that faculty have been serving on the project and shows them as a percent of total faculty. Some roles, such as the faculty coaches, are designed to be filled by only a few specifically identified individuals, but other roles such as committee members allow broader participation and representation of all faculty. This chart may not capture all aspects of participants’ involvement because not all participation has been tallied, or documented. In addition, there may be some overlap in counts within roles, but overall the chart indicates that Ramp-Up is not an isolated project, but that faculty are involved in its initiatives in a variety ways.

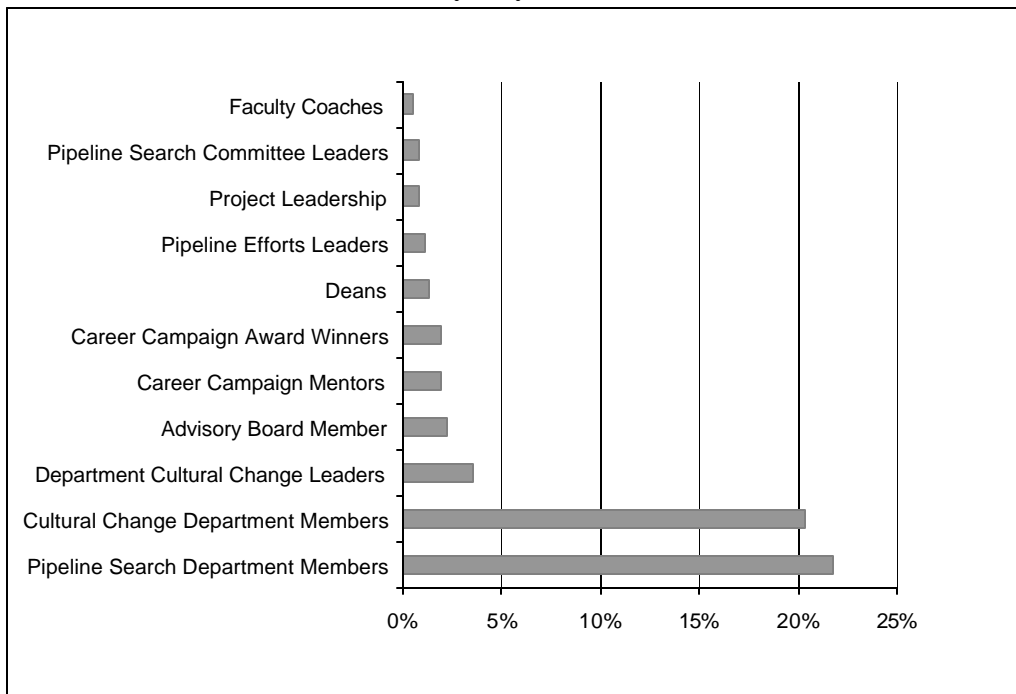


Chart 2 Role in Ramp-Up & Percent of Total Faculty (364)

In our selection process for conducting the interviews, we developed a matrix across the five schools and departments crossed with position (assistant, associate, professor) and gender, to determine a relative proportion of individuals to select so that the sample would be representative. We used the charts illustrating participation and other data to help identify individuals who might have multiple perspectives of Ramp-Up. We also

interviewed at least one non-participant. Table 1 shows the number of individuals in project and university leadership, the number and percent for each position and the departments that were represented by the interviews.

There were 28 scheduled interviews. All interviews were conducted except one where the faculty person was not able to make the interview.

The 27 interviews we conducted represent 18% of participants or those having a direct role (N=153). This also includes all three leaders of the project. Interviews were almost equally distributed between genders with just a little over 50% female.

Table 1. Departments & Schools

<i>Category of Classification</i>	<i>Number</i>	<i>Percent of Total</i>
University & Program Level leadership	8	30%
Positions		
Professors	14	52%
Associates	4	15%
Assistants	9	33%
Total	27	100%
School of Science Total	8	30%
Department BIOL	5	
Department Physics	1	
Department Math	1	
Department of Chemistry and Chemical Biology	(1)	
Department of Computer Science		
Department of Earth and Environmental Sciences		
School of Engineering Total	13	48%
Department MANE	5	
Department CBE	1	
Department ECSE	2	
Department BIOM	2	
Department MS & E	1	
Department C&EE	3	
Decision Sciences and Engineering Systems		
Other: Architecture, Humanities and Social Sciences, & Management	6	22%

Analyses of Interview Data

The majority of the interviews were digitally recorded, with a tape cassette backup on selected interviews (generally, when the evaluators felt that the digital time left was limited). All of the recordings were transcribed by a professional service used extensively by the consulting firm. The files were returned in a MS WORD format. These files were reviewed for completeness and correctness. The transcripts were then given an anonymous ID for confidentiality.

For analysis, we used a two-step process to develop codes for the data. The first step was to review the transcripts again to identify any concepts and specific words that showed up regularly. Second, a coding list was developed based on the transcript review and the questions that had been asked in the interviews. Over 190 codes were developed that

included, for example, specific project activities, career history, and several aspects of mentoring. (Appendix B)

We then coded each transcript using NVIVO qualitative data analysis software.⁵ We coded each text unit within the documents using the pre-developed codes and added other codes as needed, such as gender issues, collegial contact outside RPI, collegial contact inside RPI, etc. The two evaluators reviewed and discussed their individual coding for inter-rater reliability across the total set of interviews.

We found that the coding provided rich data summaries on many themes, but not all. The interviews were complex enough that for some data points, such as “disadvantages of work situation”, or “passion for work”, the summaries could provide a guide, but were not specific enough to provide stand-alone data.

As we reviewed the transcripts and the data resulting from the summary codes, we determined that with the small sample size and the intensely personal nature of the data that it would not be appropriate to provide summary tables of numbers and percents of codes, or charts with the percent and number of coded sections of text for themes. Additionally, the text units did not break easily into clusters that were appropriate for that type of summary. We had over 190 codes and for many text units there were 3-6 or more codes.

To guide our final analysis, we focused the code summaries on change and the culture of RPI. We first used the data to explore how respondents perceived the culture of RPI and responses related to the seven categories of questions, and focused on these components in our reporting.

With the small sample size across several strata, and the personal and complex nature of the data, we do not report the number of respondents who gave particular answers. Instead, we report on the broad themes that were clear, and highlight relevant points made by individuals.

We appreciate that each of the interviewees were so gracious and generous with their time and conversation. Each person we interviewed was genuinely open and responsive and shared many very personal details of their career paths, their advancement, and their personal lives.

Evaluation Findings

Findings Framework

Our findings are presented in three tiers. First, we briefly describe how we believe the findings further specify cultural change at RPI as related to the promotion and tenure of female faculty.

⁵ QSR NVIVO version 7.0.0128

Second, we describe features of the context at RPI that may affect the process of cultural change. While these features were not directly the focus of the evaluation questions, or the project, they emerged from the interviews and may have an impact.

Third, we present findings that directly answer the four central evaluation questions related to the project.

Defining Cultural Transformation: Two Components

The core goal of Ramp-Up is cultural transformation that supports the advancement of female faculty. The Hubbard and Hubbard climate study of RPI in 2004 found that there was a strong perception of a glass ceiling in the advancement of female faculty, a ceiling created by favoritism and the ‘buddy system’. The initiators of Ramp-Up recognized that these are difficult areas to address by programs and initiatives, and that creating a climate of ‘finding’ and removing favoritism would not necessarily lead to a positive replacement. Instead, the project components focus on creating new conditions for women on campus.

From our analysis of project documents and the interviews we conducted, we found two central components defined culture in relation to Ramp-Up goals: meaningful connections among faculty and an available flow of information about career choices and progress. Information flows and connections allow individuals to define a career path through multiple actions and tools, and to them move successfully through the promotion and tenure process. If these two central components of culture do not exist, are insufficient, or there are barriers to the flows of information and forming connections, then the culture cannot support individuals equitably moving successfully through a promotion and tenure process.

We used these two components, connections and information flows, as the framework for exploring our findings. In looking at the impact and process of Ramp-Up in its first year, we focus on the extent to which the project has increased meaningful connections among faculty, and access to information related to career paths.

In addition to culture as the foundation, as we initially reflected on the interviews data, we identified several factors that define the context in which Ramp-Up operates. While these were not the focus of the evaluation, they are likely to influence the project, and they bear consideration as Ramp-Up progresses. The factors under context are a mix of positive and negative. Some could be considered indicators of the effects of culture (such as trust), or some factors may add to understanding overall culture better (such as excellence). We also suggest that there may be other context factors that could be added to the list such as from the findings of other Ramp-Up activities (i.e. the Culture Survey).

Trust: We found a lack of trust in many areas, but an enormous trust in Ramp-Up leadership. The absence appeared in regard to people and process. We saw a lack of trust in what faculty believe will happen to them regarding their career at RPI, a lack of trust about the availability of reliable information about promotion and tenure, and frequently, a lack of trust between the administration and faculty. We noted, however, the enormous

trust that faculty and administration have in the Ramp-Up leadership. We also noted that the Provost is focused on building trust into the working relationships throughout the university.

Complexity of Relationships: There are multiple variations on working relationships from internal collaborations across schools, departments, and individuals to working relationships external to the university. This complexity and the mix of networks at RPI mean that there will be an exception to almost every ‘rule’ in gaining a sense of relationships at the university.

Excellence: Individuals at RPI vary in their stated goals for their work: some want to attain awards, some want to be best in their fields; others just want to do “very good science”. Without doubt, there is a consistent desire to excel and the acceptance of extraordinary levels of work to attain excellence.

Related to this, we found that people who choose to work at RPI tend to be “good of heart”; they have a passion for what they do, and have great joy in their work. They believe that they should give service; they believe in growing scientific knowledge and often spoke of spreading knowledge about their field, often at the K-12 level or of increasing the participation of women in science. We found this passion rippling under the surface at RPI, and we would suggest many individuals do not realize this is a widespread and shared value at their institution.

The Question of the Core: As described in the Rensselaer Plan, RPI is in a process of institutional reflection and definition of its core work and values. We found questions of what constituted the core of RPI in numerous areas. Variation in views of the extent to which the university values teaching, for example, came up often. While RPI is known as a teaching institution, respondents often mentioned the primacy of successful research in advancement processes. Some institutional decisions related to the distribution of faculty in different buildings contradicted the quest for collegiality as described in the plan. Research agendas were also sometimes described as being further from the topics most valued at the university.

Report on Evaluation Questions

Under the processes towards cultural transformation and the increased advancement of female faculty, there were four evaluation questions, which we reordered and will report on as listed below. We reordered these to reflect that there is movement from a broader perspective to more specific elements.

- Project impact on culture
- Working relationships
- Mentoring
- Career paths

Project Impact on Culture

How do faculty members view the project components? Do they perceive Ramp-Up activities as affecting the culture of their department? Of the university?

To examine how faculty members perceive Ramp-Up, we first looked at post-event survey data collected by Ramp-Up staff following five project events: the initial colloquy, speed networking, the women's retreat, and two workshops, one on family work balance and one on mentoring. Overall, participants were very positive about the events. (All post event survey results, are available on Ramp-Up website at <http://rampup.rpi.edu/Evaluation.html>). The eleven respondents in speed networking, for example, indicated that the activity was very helpful for networking with colleagues, and somewhat helpful for establishing research collaboration. Given a choice from none to more than four, most people indicated that there were over three people that they hoped to follow up with.

The two workshops, on mentoring and family life issues were both rated as being highly relevant, as were the topics of the women's retreat and the colloquy. The quality of speakers at the colloquy was also highly rated. Slightly lower ratings were given when participants were asked whether they gained new perspectives or new information.

While the post-event surveys indicated satisfaction with the experience of Ramp-Up components, they did not address the question of impact. In interviews, we found that when respondents spoke of the impact of Ramp-Up, they were more likely to speak of the presence of the project overall than of specific events. In regards to the project overall, the comments were overwhelmingly positive. Every respondent in our sample expressed in some way that the project held the real potential for positively affecting the advancement of women at RPI. It is notable that no skepticism was expressed about a project tackling a long-standing institutional difficulty.

When talking about change that had occurred so far through Ramp-Up, respondents often talked about an increased awareness of the issues women faculty faced. As one respondent put it, 'they are shining a light on the problem'. Another said 'Now they have people talking about the problem'. One respondent commented that alerting department heads to gender issues was a change in and of itself. After attending the retreat, one woman faculty member told us, "It was good. I've concluded I need to be around more women more often." Another said of the Ramp-Up Initiatives, "...I am very appreciative of these mechanisms - a formal mechanism in place for doing changes, or providing help, or creating an environment. I think all of that is positive - very, very positive actually."

As mentioned previously, there was evidence of great trust in the project leaders, Cheryl Geisler and Debbie Kaminski. The positive comments about Ramp-Up were often grounded in respect for the project leaders. The project leaders have very strong connections to departments and individuals and extensive experiences through a variety of leadership roles.

The trust also came partly from how Ramp-Up had framed its approach. A frequent comment was that though Ramp-Up is focused on women, it had an inclusive approach that addressed issues that affected the entire campus.

When discussing the impact of specific events, the Women's Retreat was mentioned frequently. As with the overall impact of the project, the comments of retreat participants were often about the possibility of change. One participant said the retreat had given the "beginning of a sense of community with other women on campus", and another talked about "...starting to talk to other women differently".

Comments about how the events could be improved related to some of the context issues described above, particularly the drive towards excellence and the major workloads accepted to reach it. Participants and non-participants in the retreat, for example, both spoke to the difficulty of 'taking off' a large chunk of weekend time, from work and from family. Several respondents commented that they wished there were different formats for accessing events, rather than one-time events. "If it's such important information", one respondent said, "there should be multiple opportunities to access it."

Working Relationships

What changes are taking place in the working relationships of departments? Across the university?

By working relationships, we mean those that focus on professional activity. As is appropriate for this baseline year of the project, we begin first by examining the data for information on the current state of working relationships. We follow this by examining the impact of Ramp-Up on developing relationships.

Current Working Relationships: Rensselaer promotes interdisciplinary studies for its students and has defined many interdisciplinary programs for both undergraduate and graduate students. Collaboration tends to be very project specific and is impacted by a variety of variables. From our interviews, it is unclear as to what degree all faculty are integrated into some kind of working relationship within their own departments and across others. We get the sense that some departments are very strongly connected, but that there are not systematic mechanisms for collaborative work either within or between departments.

The variation in the range of opportunities to form working relationships and a sense of cohesive departmental culture is evident in these comments:

"We try to hire people that will come in and work with somebody who is here, but without a big existing program to step into, you don't have the momentum behind you and the top universities tend to do that. ... But if somebody has to come in and sort of start from scratch and they don't have anybody to work with, it's a real problem"

“Well what has come down in our department is that everyone for themselves. Do your own thing and just stay out of the way. “

”And then there are the people who bring in the big grants who don’t contribute to the department in terms of teaching except where they have to or committee work except where they have to and aren’t concerned about building a department. They’re just concerned about doing their research groups”.

“...our department... we’re all together so that we talk to each and we have a coffee room and we’re very close with each other. And so that during the day you spend some time, sometimes a lot of time, talking to people; you get to sit in peoples’ offices, you talk about problems, talk about students, talk about this, so the communication in our department’s pretty close.”

The individuals we interviewed often spoke of wanting opportunities and resources for creating a “sense of community.” We heard that many individuals feel isolated. Interviewees noted that they also think that this is a universal problem, and partially stems from the need to excel individually for advancement. One respondent said, “...So you have people that are essentially very self-focused and with very large egos because they’re so successful. Trying to get people to work together as a community for the betterment of the community and [recognizing] that my success is going to improve because the community around me improves [is a change of mindset]”.

A commonly mentioned set of impacts on working relationships can be labeled geography. Geography can affect working relationships in a variety of ways ranging from the location of a building, how departments are housed, and the location between where research takes place and the campus. Some researchers collaborate with others nationally and internationally on huge projects that require equipment of astronomical costs, located on one site. Others conduct research off site near campus, but which cuts into available time on a daily basis. As one interviewee said,

“Sometimes geography plays a big part. You know, we have departments that are split between buildings and that makes a much bigger difference than I had thought. You know, you have somebody who's cloistered away in some other building, and most of the department is in a different building, and they don't have the same water fountain discussions that they probably would benefit from”.

This felt particularly true for the Biology department. The assignment of those active in research to one facility, and those primarily teaching in another effectively split the department by seniority. Our perceptions were that this effectively created a separate college.

Several respondents spoke of the lack of common space, saying there is no one location for faculty to meet on campus either for lunch or to work across departments or even see

individuals from other departments. One respondent described missing a former faculty dining room:

“There were these round tables, where you were free to take an empty seat. And you could listen to the conversations and join in, and it was like I didn’t even have to be mentored officially, I learned so much by listening. And there’s nothing like that now.”

Impact of Ramp-Up: It appears that Ramp-Up has provided an awareness of the impact of not having common overlaps and tools to help departments create structures for addressing these cultural issues. Ramp-Up itself has been a model for disseminating information across the university through faculty meetings, emails, and personal connections.

Departments have appeared to be very receptive to Ramp-Up, particularly at the Dean level. The interviews gave evidence of some of the ways that departments are creating structures for developing working relationships and increasing communication. These have included:

- Weekly lunches – informal meetings for discussing career development and life in general and to provide a common time to meet, regularly
- Departmental retreats – formal meetings to focus on the scientific research of a department
- Department Heads have taken on the responsibility of meeting all assistant s.

Mentoring

Are female faculty members reporting changes in the mentoring they receive?

In answer to the question about increased mentoring for female faculty, from our interviews, we would say yes. Respondents spoke of increased opportunities and avenues for mentoring as a direct result of Ramp-Up components. Further, the university environment appears to be changing, with a new focus on the importance of mentoring. As this takes place, several issues are emerging. We report below on changing opportunities, environment, and issues.

Opportunities: Ramp-Up’s design of multiple avenues for mentoring is showing success in increasing access to mentors across career stages. Participants in what is perhaps the most direct means of promoting mentor-mentee relationships, the Career Campaign Awards, said that the process of applying for and working through the grant had created stronger relationships with mentors. As one recipient put it, “now [my mentor and I] have lunch together regularly”.

The need for a variety of means of mentoring was clear in the comment of another respondent, who said that the ‘jump-start’ [career campaign awards] were better for

faculty more junior than me. But there is a mentor [the faculty coach] for my school and that might really help.”

Faculty coaches were mentioned frequently as promising sources of information. The two faculty coaches now in place have been highly proactive by initiating contact with faculty under their purview. In our interviews, all comments made about the faculty coaches were positive. They were considered helpful in the information they gave, and trustworthy for discussing confidential career questions. The Ramp-Up staff spent considerable time and effort in selecting the faculty coaches, using a process of nominations and extensive review. This process seems to have been highly worthwhile. One respondent seems to have ‘checked out’ views on her faculty coach before talking to him, and reported that all views were overwhelmingly favorable.

In another avenue of mentoring, the interventions process often led to the forming of new relationships. Interviewees involved in interventions typically described being linked to a senior or administrative staff member as part of the process of changing their situation. The link appeared to be lasting, as the interviewees typically said that they now felt they had someone they could go to with difficulties.

Several respondents talked about meeting senior faculty through networking activities, and feeling that their network of possible mentors had grown. One woman talked of the Women’s Retreat as an opportunity to be mentored, describing what she had learned about asking for research resources.

Awareness: As well as an increase in individual opportunities for mentoring, there is evidence of an increase in overall awareness of the value of mentoring. There were comments about how Ramp-Up was changing the views and knowledge about mentoring:

So there is, there are two aspects to this...there’s definitely...the significant effort for the female faculty and helping them. But also it’s ...if you raise the consciousness of a chair so that they, how they mentor a young faculty member, just not a female one, this is a good thing... So it’s just the whole system of trying to make it run better than it does.

The opening up of opportunities and recognition of mentoring was clear in one comment from a senior faculty member considering opportunities to mentor:

Since the retreat, I’ve really tuned into the program [Ramp-Up], so I am really keeping an eye on what they are doing...I see an appeal for a mentor-mentee pair-up. Someone will show up for that and hopefully we will submit a proposal...Since the retreat I’m keeping an eye on what the group is doing and how I can participate with this group.

Emerging Discussions: Emerging questions and discussions about mentoring are evident. Topics within our data included formal vs. informal mentoring, what constituted appropriate, helpful mentoring, and individual skills in acquiring mentors.

Views differed on the question of how formalized mentoring should be. One respondent saw a need for the formal assigning of mentors and an evaluation process, similar to that of teaching. Another respondent had a contrasting view:

It's very hard to create. I mean, let's just look at part of it. We have from time to time tried to create mentoring relationships where someone has [been] someone else's official mentor. I didn't need anything like that. I work in a group. They were people just acting like mentors to me. That was it. I mean, to have somebody who really takes somebody else's career seriously, they almost always have to work with them and their careers have to be coupled in some way.

Another spoke of the lengthy time needed to change views on mentoring:

And so you can't just say okay, how do you create a different culture by saying okay, now you're the mentor. Now, I mean, look at it in a slightly different way and I think yes, you can do it. But it takes a long time. I think you have to actually go through almost a generation of faculty and convince them that they have to be working with one another because people will come in with their bad habits or whatever and they don't see a different way of doing things and it just takes a long time to change the culture.

Related was the question of appropriate mentoring – that is, mentoring that genuinely matched the needs of the mentee. One comment that arose that is specific to RPI is the effect of the long budget dilemma, which led to minimum hiring levels for several years. This can mean that senior faculty gained tenure at a time in which conditions were different. Touching on this point, a respondent spoke to possible generational differences in views on mentoring:

I think if we talk about mentorship - and true mentorship - I think there are two issues: the expectations of what a mentor should do are changing over the years, or being defined in certain ways; and the expectation of the mentor and what they should do is another definition - and they are different... so I think that the young person coming into the mentorship arrangement nowadays sees this as their right to be mentored, and it's a role, and that the mentor almost has obligation to do something; where the person who is the mentor does not see the relationship that way. They see that they are being asked to take on a role, which they are willing to do, but they don't see the obligation to do everything that the mentee thinks should be done. It's very interesting: I think the people being mentored should realize that this is not a formal thing; there isn't a requirement to do things; and the people that are mentors should realize that there are certain things - that our expectations of this person that you've taken on to mentor - that you should ask them about, and find out, "What are your expectations of me?" Because I see the problem in the mentor-mentee, relationship is communication and expectation. I am willing to mentor

people for example, but my thought of mentorship is at quite a high level. I see that other people's thoughts of mentorship are at a very fundamental level, "Write the proposal for me." For example, "Take me to Washington and introduce me to people who will then fund me." Not, "Introduce me to people. Make sure the connection is made so that I can get funding." This is a very interesting dynamic that I see happening, and it's all on how we discuss these relationships. They are not informal relationships anymore; they are becoming formal. I think that true mentorship as we read about it - as it was, as it was developed - it was a lot more informal.

In appropriate mentoring, one factor that kept coming up was the number of mentors needed. Several respondents spoke of it as a given that one mentor was not enough. As one said, "How do you choose? Could be great on paper, but maybe you need a lot of different ones."

Another commented that having only one mentor had been a detriment for her –her mentor's approach was not adequate for a particularly difficult situation. As one respondent explained it, the ideal mentor might change over time, as with a friendship.

The findings from Ramp-Up so far suggest that a number of options should stay in place for mentoring. Finding out what has worked in different departments and sharing that information might be useful – one department, for example, has mentoring committees.

Individual skills in obtaining mentors: In analyzing comments on mentors, there was notable variation in skills in obtaining mentors. For some junior faculty, the process of obtaining mentors seemed relatively straightforward. One, for example, spoke of having several mentors and how she had developed the relationships since her graduate school days. For others, the recognition of the need for a network of mentors was just evolving. Part of the process of building mentorship throughout RPI may well be to build and share a knowledge base among mentees: knowledge about seeking mentors, and maintaining useful mentor relationships. Mentees need to be talking with each other.

Career Paths

Are there changes in how female faculty members view their possible career trajectories at RPI?

In this section, we describe major factors that affect how careers are viewed now so that change can be examined over the duration of Ramp-Up.

Clarity of the Promotion and Tenure Process: We found that the *details* of the promotion and tenure process are unclear to many faculty members, and that they often report not knowing where to go to gain clarifying information. We suggest that this is one reason that the 'buddy system' and favoritism may have been seen as playing a major role in maintaining a glass ceiling – specifics on the process appear difficult to obtain.

When respondents at the assistant professor level were asked about the clarity of the process for advancement, they, as would be expected, spoke mostly of the tenure process. They spoke often of knowing the general outline of the process, but of being very unclear on specifics:

Everyone tells you, you got to have published papers, you got to have grants...you got to have recognition in the field, but what does that mean? Does that mean one high profile paper is enough? Or 10 low profile papers? Is one grant enough? How much do those grants have to be?"

Another commented that while she understood the basic steps "you've got to write papers, and you've got to get grants and you've got to do this and you've got to do that"; she felt very unsure on how to operationalize that process: "but, like, how do you strategize, like what grad students you need? Or how to you manage the graduate students?" Other concerns were related to the development of research labs and the variability of time and funding to get a lab started based on many factors including the field of research and the type of lab.

Some respondents acknowledged that the process required flexibility in measuring success, but spoke of the impact:

...I don't think you'll every get anyone to put a quantitative metric to it...that's just the nature of the beast in the end it becomes very subjective and, I think to a lot of junior faculty, that's scary because you could think you're doing the right things, but in the end, not get tenure.

As well as not knowing specifics of the tenure process, respondents were not sure whether specific factors relating to their own work would be understood in the review process. One respondent, for example, said that, she had been told '8 to 12' papers were the norm in a particular time frame. Within her field, this was an unlikely number and fewer papers were expected from researchers at all levels. She was not sure how to make this difference known to reviewers, or how to ensure sure it would be heard. As one respondent told us, "It's like we put in the information, and it's a black box, we don't know what happens inside it."

In a particularly interesting comment, one respondent compared the process favorably in relation to other institutions and felt more certainty about the process than other respondents, but also talked about the need to compete 'against the system':

It's not like MIT, where they hire 6 juniors and only expect one to make it. You're competing against the system, not colleagues. If you meet standards, you will get promotions.

Respondents at the associate level were also likely to report that the path for advancement was not clear. They often talked about particular roadblocks. One said that while she was

clear on what scholarship was required, she did not know what constituted acceptable service.

When asked if they knew where to go to build information on advancement, most respondents said that they did not. RPI does have information available on advancement such as the P&T Guide, the Faculty Handbook, and the Individual Development Plan. Moreover, there are methods in place such as the provost office's yearly meeting with junior faculty to update them on the current state of the institute. One respondent summed up this meeting and what we also heard from others generally about information and communication "...but for the most part, it's, you know, the same thing every year, which is really no information. It's all the stuff that we know we need to do, but we can't quantify it".

One faculty member spoke of learning a great deal about the tenure process when she attended a job talk and heard a member of the P&T committee speak there.

Respondents reported three factors that appeared to be positively influencing the clarity of the process and the availability of information:

- Several respondents spoke very positively of having a new department head who was highly supportive of faculty, and very clear about processes for advancement. As one respondent said, "It makes all the difference".
- Assistant professor who reported having an understanding of how to advance tended to also report having strong mentorship.
- The faculty coaches were mentioned as a resource for learning about the specifics of advancement processes. One respondent who reported already having a good understanding of the tenure process said that a conversation with the faculty coach had given her good knowledge about the "internal steps" of the process and clarification of "the many, many steps that are beyond my control".

The work/family balance: Interviewees spoke repeatedly of the effect of childbearing and rearing on career paths. As one respondent explained it; "It's not a work/life balance, it's a constant juggling act, and you hope you don't drop a ball."

Several respondents did bring up and acknowledge that the difference between having and not having a family existed for men and women, but then commented that the difference was larger for women. Several interviewees talked about making use of university supports such as babysitting, stopping the tenure clock, and a semester off. One respondent talked about the judgment of careers with time off, saying that, "The judgment is not just what's being done, but the rate at which it's being done, and that's harder for women."

Instances of deep bias: We found in our interviews cases where bias against female faculty was egregious, with mistreatment by male faculty reported to us. Within our sample, Ramp-Up interventions took place for these circumstances. Our evaluation does not provide data on the overall incidence of such cases. However, we suggest that the possibility of further cases be considered and that the instances of such bias and the manner in which they were addressed become appropriately visible in the RPI community.

The high demand of obtaining funding for science careers: As one respondent put it, “you must be hearing about this from everyone, it’s killing us”. We did hear it frequently: The current diminution of funding for science research has created intense pressure in the grants process. Respondents talked about demoralized graduate students unsure about continuing in their own career path as they watched faculty shoulder this pressure. The effect may be particularly strong on women with family responsibilities. While it is obviously out of the purview of Ramp-Up or in fact RPI to have a direct effect on the situation, it is also clear that individuals struggling with the issue alone will not bring about success. This issue should be a topic of discussion and programmatic support within the university community.

Attention to the hiring process to ensure that women faculty are brought on board for core research: Ramp-Up is focused on the advancement of RPI female faculty throughout their career paths, rather than just the process of hiring female faculty. We found, though, that in at least two intervention cases, part of the issue appeared to stem from a feature of the hiring process: the women faculty had not been brought on for what was considered core research of their departments. This made it far more difficult for them to build collegial relationships, find mentorship and obtain adequate resources.

The next section reviews the NSF Indicator Data.

NSF Indicator Data Summary

The NSF Indicator Data prepared for the First Year Annual Report and representing the baseline data for the project is provided in Appendix A. This report was prepared by a Ramp-Up principal investigator. For the external evaluation, we reviewed the indicator data to consider it in context provided by the interviews. We comment here on possible factors influencing the indicator areas, and suggest further areas for research, project alignment to indicator findings, and further development of the indicators.

Indicator Development & Findings

The ADVANCE Institutional Transformation (ADVANCE: IT) funded programs are required to create an annual report for NSF, related to the project's progress toward the goals of the program. To provide a more consistent format for reporting, so that NSF could explore data across all funded programs, a toolkit⁶ was developed with methods, procedures, and templates for preparing tables to meet the NSF reporting requirements for the annual report. However, the toolkit is a guideline and institutions are free to modify the examples that are provided to align with other factors such as the collection and reporting processes of a specific institution.

The data required are referred to as indicators. The indicators in the toolkit came about when a working group reviewed more than 30 institutions' reports from commissions on the status of women, and summarized that four questions were fundamental. The four questions provide a framework for documenting progress towards the goals of the ADVANCE Institutional Transformation programs. These questions are designed to get at the overall status of women within an institution. The four questions are:

1. What is the distribution of science and engineering faculty by gender, rank, and department?
2. What are the outcomes of institutional processes of recruitment and advancement for men and women?
3. What is the gender distribution of science and engineering faculty in leadership positions in the institution?
4. What is the allocation of resources for science and engineering faculty by gender at the institution?

Ramp-Up used data from 2004-06 as their baseline data against which impacts from the implementation of Ramp-Up will be measured. Overall, they found from their review of the data that over the three-year period there has been substantial positive change:

- The total number of women faculty increased. This took place across all departments.
- The salaries of women have become more comparable to men's,

⁶ Toolkit for Reporting Progress Toward NSF ADVANCE: Institutional Transformation Goals Prepared by ADVANCE Institutional Transformation Indicators Working Group. <http://research.cs.vt.edu/advance/index.htm>

- Women are moving into administrative positions, particularly that of department head

On the less positive side:

- Women leave voluntarily much more frequently than men do.
- Among men and women leaving voluntarily, women tend to leave at a lower rank. While most men leaving voluntarily were full professors, the women were assistant or associate.
- Women spend more time in rank at the associate professor level.
- Women are still under-represented among the associate and full professors
- The percent of women at the associate level for a given number of years is larger than the percent of men at that same level
- Some women are relatively isolated, and four are solo woman in their department
- Two departments, Earth and Environmental Sciences and Cognitive Sciences have no women at all.

Recommendations for Indicator Data

As the Ramp-Up principal investigators note in their indicator report, the data show a situation ripe for improvement in the status of women, but some serious obstacles. The high rates at which women leave RPI voluntarily before reaching fully rank are of particular concern when considering the promotion and retention of the new cohort of female faculty.

As noted in the Ramp-Up annual report, there is a great deal of importance in the questions of why faculty leave and when they leave. The proportional difference by gender in the voluntary attrition by rank is notable, shown in Table 1 below. As the table indicates, 14 out of 16 men left at the full professor level and only 1 out of 9 women left at the professor level.

Table 2. Overall Percent Voluntary, Non-retirement Attrition by Rank and Gender

<i>Position</i>	<i>Assistant</i>		<i>Associate</i>		<i>Full</i>		<i>Percent of Full</i>	
	Men	Women	Men	Women	Men	women	Men	Women
Year								
2005	1	2	0	1	6	1	86%	25%
2006	0	4	1	1	8	0	92%	0%
Total	1	6	1	2	14	1	88%	11%

On the surface the data on when individuals leave in the promotion and tenure process suggests that men may be leaving for better opportunities (at full professor levels) and women may be leaving for different reasons (at assistant and associate levels). Understanding more about the differences in departments and schools is suggested by the contextual data. The one clear item that stands out is that departments are unique.

Another question related to leaving or not leaving that could be asked is how much of a role does flexibility play in women’s choices to leave? By flexibility, we mean how much

of the decision to leave is impacted by dual careers, trailing spouses, children, the desire for a stable family life, and decisions about not having children.

We suggest further research and programmatic efforts to address the attrition question. Under research, the Ramp-Up leadership team is already in the process of monitoring attrition and many of their efforts are directed at preventing future departures of young women faculty and on understanding when, where and why women may leave. This data is found in the annual report in Tables 6 (a) and (b), Voluntary, Non-retirement Attrition, by Rank and Gender. We think that the cohort analysis in progress will further help to explore this area.

We strongly suggest that further data be gathered from individuals who voluntarily left RPI during the analysis period. Concrete knowledge about why they left will allow for specificity of program and university efforts and will also continue to build the more data-driven, transparent discussions about gender issues taking place at RPI. As well as the obvious question of why they left, we would suggest probing several areas in interviews or surveys with individuals who have left RPI, especially exploring variance by gender:⁷

- Family/work balance: this includes being affected by a spouse's career change.
- Lack of clarity and knowledge about how to progress at RPI, and lack of sources to build a better understanding
- Perception of a hostile environment, e.g., that there were individuals creating road blocks to career progress
- Preferable features of new environment/job
- 'Interaction' effects of family/work balance and features of RPI environment

We also would suggest that another area to explore further is why and when faculty are hired and at what position in the tenure process men and women are hired. The contextual data from the evaluation suggests that men, particularly in recent years, may have been hired after they have already attained tenure and that when they come into the RPI community, they will not be involved in the tenure processes. This is not to diminish the purpose for hiring any one specific person, but rather to note that this is an area that should be addressed and monitored. If in response to the need to hire experienced leadership in terms of Deans and department chairs, no amount of support for the advancement of women these individuals bring will override the lack of hiring senior women. This points to the need for the pipeline process and how this process has a direct on the indicator data.

Two other areas that are impacted by better mentoring and information are start-up packages and resources. As NSF indicates, start-up packages are difficult to get data on

⁷ Our external evaluation interviews were not designed to gather information about attrition, and we do not want to suggest that we have evidence that these are causes for attrition; however, our data does suggest that these are worthwhile areas for exploration.

and need to be tracked and aggregated over time but from the range of experiences the interview data indicated, start-up packages might be a critical area to explore for equity issues and the impact of mentoring.

We also feel that the indicator data and the interview findings show a clear need for more specified programmatic attention on the transition from associate to full professor. In the indicator report, the author comments that as well as the visible cases of this transition, there may be more cases that do not make it to a formal review. Our data suggests that this is in fact the case; associate professors spoke of not being sure what next steps should be taken to transition to full. We suggest a targeted approach to what might be called mid-career mentoring. Existing components of Ramp-Up, the faculty coaches and the opportunity for increased advocacy, might serve as a means for implementation. Just as an e-mail was sent to determine if specific interventions were needed, it may be worthwhile to solicit faculty who are looking for means of advancing from associate to full. Faculty coaches could respond further to determine what the common issues are at that level.

We also suggest further development of the indicators measuring resource distribution. First, the resource of graduate student support was mentioned frequently by interviewees and, if possible, should be included. Second, indicators measuring mentoring support and cohesiveness of network would link the indicators closely to the project design by providing a framework for aligning analysis. This same measure could also help to identify what resources are found to be most lacking and where. Data gathered by the current social network analysis (SNA) underway may help serve this purpose.

Conclusion and Recommendations

Ramp-Up has accomplished much in its initial phase. It has gained the confidence of the RPI community, it has changed the conversation around gender issues on campus, and it has established new means of mentoring and begun the process of building new levels of community on campus.

To reach its goal of transforming culture at RPI, Ramp-Up has focused on increasing meaningful connections among faculty and an available flow of information about career choices and progress. The expectation of the project is that these information flows and connections allow individuals to define a career path through multiple actions, and move successfully through the promotion and tenure process.

Summarizing our findings, we look first at individual Ramp-Up components in regards to increased meaningful connections among faculty, and access to information related to career paths, and then consider the impact of the project overall.

Ramp-Up Components

Advocacy and Advancement Reform: At this stage, interventions have been a central means of advocacy by Ramp-Up. In our interviews, respondents who had been through interventions, while not yet stating that their issues had been fully resolved, spoke to

significant change in their situation. Often this change came through establishment of new relationships with an administrator or senior faculty member, and these relationships appear to be ongoing. The interventions built meaningful connections and established new pathways for information.

The results of the interventions at this point suggest that the advocacy role is a highly viable one for Ramp-Up. In our recommendations, we speak to possibilities for expanding this role.

Faculty coaches: The initiation of the faculty coach role is one of the most successful components of Ramp-Up. The coaches have been proactive in contacting faculty members, and interviewees spoke highly of their conversations with coaches. The information provided by the coaches was described as useful by respondents at several stages in the career path.

Departmental Culture Change Grants: Department heads have been very responsive to these grant opportunities. The activities sponsored by the grants are currently getting underway. In our interviewees, we found that faculty who had worked on these grant proposals were positive about the process, and about the possibilities for change.

Events and Activities: While post-event surveys indicated that participants were satisfied with their experiences in workshops, interviewees did not describe much impact from these events. The interviews did reinforce that the topics of the workshops given so far, on mentoring and family/work balance, are highly important to the university community.

The impact of the initial colloquy appeared to be greater, with respondents saying that it drew attention to Ramp-Up and a university focus on gender issues. The impact of the women's retreat was spoken of favorably, with respondents reporting that it built community and a new set of connections.

Several respondents commented that more opportunities and formats for activities would be useful. In considering how well Ramp-Up activities have worked as a means for increasing information about women's issues on campus, it appears that they have added to an overall awareness, but have not provided detailed information related to career paths. As a means of building community, the women's retreat showed promise.

Career Campaign Awards: The impact of these awards so far has been positive for recipients, helping them to build stronger connections with mentors as well as providing resources for career-building activities. The impact of those activities should be tracked in future evaluations.

Pipeline search: This is currently underway, and has not led to new hires yet. The indicators analysis reinforces the need to bring in senior women.

Program Impact

In interviews, we found that when respondents spoke of the impact of Ramp-Up, they were more likely to speak of the presence of the project overall than of specific events. In regards to the project overall, the comments were overwhelmingly positive. Every respondent in our sample expressed in some way that the project held the real potential for positively affecting the advancement of women at RPI. It is notable that no skepticism was expressed about a project tackling a long-standing institutional difficulty.

When talking about change that had occurred so far through Ramp-Up, respondents often talked about an increased awareness of the issues women faculty faced. As one respondent put it, ‘they are shining a light on the problem’. Another said ‘Now they have people talking about the problem’. One respondent commented that alerting department heads to gender issues was a change in and of itself.

As mentioned previously, there was evidence of great trust in the project leaders, Cheryl Geisler and Debbie Kaminski. The positive comments about Ramp-Up were often grounded in respect for the project leaders. As one respondent put it, “Any change depends upon who picks up the flag. Debbie and Cheryl have picked this up and are not going to drop it.”

Working Relationships

While some departments are very strongly connected, there are not systematic mechanisms for collaborative work. Several respondents spoke of the lack of common space, saying there is no one location for faculty to meet on campus either for lunch or to work across departments or even see individuals from other departments.

It appears that Ramp-Up has provided an awareness of the impact of not having common overlaps and tools to help departments create structures for addressing these issues. Ramp-Up itself has been a model for disseminating information across the university through faculty meetings, emails, and personal connections.

Departments have appeared to be very receptive to Ramp-Up, particularly at the Dean level. The interviews gave evidence of some of the ways that departments are creating structures for developing working relationships and increasing communication using the departmental change grants.

Mentoring

From our interviews, Ramp-Up appears to be having a positive impact on the mentoring received by women faculty. Respondents spoke of increased opportunities and avenues for mentoring as a direct result of Ramp-Up. Recipients of the Career Campaign Awards talked of having strengthened relationships with the mentors who paired with them on the grants. The university environment appears to be changing, with a new focus on the importance of mentoring.

The initiation of the role of faculty coaches appears to be one of the most successful components of Ramp-Up. The coaches have been highly proactive, contacting many faculty members to offer assistance. All our faculty respondents who had contact with coaches spoke positively of the coach, and viewed the coaches as valuable sources of information. The coaches were very carefully selected by Ramp-Up staff, and the process appears to have worked well.

As the role of mentoring expands at RPI, so will the need for information on mentoring. Senior faculty will need information on how to mentor; junior faculty will need information on finding appropriate mentors.

Career Paths

The impact of Ramp-Up so far is promising, particularly on the awareness of the status of women at Rensselaer and opportunities for mentoring and increased information on promotion and tenure.

We found that the specifics of promotion and tenure process are unclear to many faculty members, and further, that faculty members are unsure about where to obtain clarifying information. We suggest that improving access to information for women will involve improving the information for everyone. At the administrative level, there was evidence that the process has consistency while being adjustable to variances of career paths; this understanding needs to be built across the university community.

In considering the career paths of women at RPI, we also found contextual issues, that while not in the direct purview of Ramp-Up, may affect its progress, and should be kept in mind in further developing and evaluating the project. To review those briefly:

Trust: We found a lack of trust in many areas, but an enormous trust in Ramp-Up leadership.

Complexity of Relationships: There are multiple variations on working relationships from internal collaborations across schools, departments, and individuals to working relationships external to the university. This complexity and the mix of networks at RPI mean that there will be an exception to almost every 'rule' in gaining a sense of relationships at the university.

Excellence: Without doubt, members of the RPI community share a consistent desire to excel and the acceptance of extraordinary levels of work to attain excellence.

The Question of the Core: We found questions of what constituted the core of RPI in numerous areas. A specific concern related to women's career paths reaches back to the hiring process, and the question of whether women faculty were being brought on for what was considered core research of their departments. If they were 'off-core, this made it far more difficult for them to build collegial relationships, find mentorship and obtain adequate resources.

Recommendations

Promote the transition from associate to full professor in project components. As the indicator data clearly show, currently women faculty at RPI are not transitioning to the status of full professor at the same rate as men, and changing this is an central aim of Ramp-up. Paradoxically, one of the current positive changes for women at RPI, an increase in the proportion of new hires who are women, may pull attention away from the mid-career stage. The new hires offer the possibility of a strong cohort in the tenure process, and may tend to focus advancement discussion on this career stage. This may be occurring particularly in regards to mentoring, which is seen as integral to early career stages.

To fully address the issue of transition to full professor, we suggest a targeted approach that might be termed ‘mid-career mentoring’. Two successful existing components of Ramp-Up, the faculty coaches and increased advocacy, could be used. In a process similar to initiating interventions, it may be worthwhile to send out a general notice offering services to female faculty who are considering the process of advancing from associate to full. Faculty coaches and advocacy could then support that process, and, if appropriate, help build network between women at this career stage. The general notice approach would also serve to further inform the campus community about this issue, continuing Ramp-Up’s effect of “shining a light” on women’s issues at RPI.

Continue research on advancement issues. The analyses carried out by Ramp-up staff on the status of women at RPI have provided a solid foundation of data supporting the program; research should be continued to further clarify issues and deepen understanding.

The indicators work being carried out by Ramp-Up staff is excellent; we recommend that measurement of the distribution of resources to faculty be expanded to include mentoring and support. The social network analysis (SNA) underway may help provide such measures. The cohort analysis underway will also provide valuable information.

We also strongly recommend that research be carried out to explore the rate of attrition at the university. In particular, it is important to contextualize the attrition by comparing it to rates at similar institutions, and to determine why men and women at RPI leave at different career stages and if their reasons for leaving are different.

Promote an understanding of and options for a mentoring network. Through the initiation of the faculty coach position and other efforts, Ramp-up has expanded the options for mentoring at RPI. We recommend that Ramp-up continue to promote an awareness of mentoring options, and the importance of building a mentoring network for information and support, rather than defining mentoring through a single relationship. Part of the process of building mentorship throughout RPI may well be to share knowledge the knowledge base among mentees: knowledge about seeking mentors, and maintaining useful mentor relationships. Mentees need to be talking with each other.

Expanding options does not mean a casualness about the process of mentoring or. In particular, we recommend that the extensive review process used to select faculty coaches continue to be used if the role is expanded.

Future work: the establishment of a center to deal with advancement issues. The evaluation findings support the concept of establishing an RPI center studying and disseminating information on promotion and tenure for all faculties, with a focus on women. The findings that support this are:

Further data and dissemination will continue to call attention to the need for and galvanize support for mechanisms to bring equity to the advancement of women.

Information on the P&T process at RPI is currently unclear, and must be clarified for RAMP-UP to succeed, and for the benefit of all faculties.

Factors external to RAMP-UP as it is now structured appear to be impacting career paths at RPI, such as managing the high demand for funding for science research. Gathering data and planning responses to such factors will be important to career advancement.

Appendix A – NSF Indicator Report

The Status of Women Faculty at Rensselaer 2004-2006

A Compilation of Baseline Data for the NSF-Sponsored Grant #0548354
Entitled:
*RAMP-UP: Reforming Advancement Processes through Institutional
Transformation*

Deborah A. Kaminski
Associate Professor
Mechanical, Aeronautical, and Nuclear Engineering Department

Introduction

In recent years, Rensselaer has made considerable progress in supporting and advancing the careers of women faculty. The total numbers of women have increased, the salaries of women have become more comparable to men's, and women are moving into administrative positions in greater numbers. Nevertheless, there are still forces at play that threaten the goal of achieving parity between men and women. Women leave voluntarily much more frequently than men do and spend more time in rank at the associate professor level. As a result, women are still largely under-represented among the associate and full professors.

In the past, careful monitoring of the status of women faculty has been a spur to improving their circumstances. With support from the National Science Foundation, a comprehensive body of data on women faculty at Rensselaer has been compiled for the time period 2004-2006. This data is intended to provide a baseline against which improvements in succeeding years can be measured. Highlights of the data will be discussed in the body of this report; the full set of indicators is detailed in the appendix.

Rensselaer is divided into five schools: Science, Engineering, Humanities and Social Sciences, Architecture, and Management. The largest school is Engineering, which includes 39% of the full-time tenure or tenure-track faculty. Science is second with 31% of the faculty, while Humanities and Social Sciences, Architecture, and Management have 17%, 5%, and 8% respectively. The National Science Foundation is charged with supporting the STEM disciplines (Science, Technology, Engineering, and Mathematics) and the SBS disciplines (Social and Behavioral Sciences). All departments of Rensselaer's schools of Science and Engineering are focused on STEM disciplines. In the other three schools, individuals who conduct research on social or behavior sciences can be found in a wide variety of departments. In fact, because of the technological focus of our institution, faculty in most departments is likely to be involved in some aspect of technological change. For example, we have faculty in the Language, Literature and Communication Department who specialize in human-computer interfaces, and faculty in the Architecture school who work on the

influence of lighting on circadian rhythms. Rensselaer is a very interdisciplinary institution, and faculty collaborate across school lines regularly. As a result, we have not excluded any department from our data analysis.

Equity and fairness are hallmarks of a great institution. Rensselaer is committed to improving the status and participation of under-represented groups among our faculty. The following data provide a snapshot of where we are and hope for a brighter and more diverse future.

Demographic Data

In the fall of 2006, Rensselaer had more tenure and tenure track women faculty than at any time earlier in its history – a total of 72 women constituting almost 20% of the faculty. Because of the history of hiring and promoting women, the women were concentrated in the lower ranks and tended to be more under-represented in Engineering than in the other schools. Fig. 1 shows a summary of the numbers of women and men by rank and school.

Full professors constitute a significant fraction of the total women faculty (29%) but they are a small fraction of all full professors (11%). In Architecture and Management, there are no full professors. There are very few women associate professors in Science and Engineering where most of the faculty are concentrated, so the prospects for substantially increasing the numbers of women full professors in the near term are limited.

In the associate professor ranks, the number of women in Humanities and Social Sciences is comparable to men. As will be seen later in the report, many of these women have spent more than 6 years in rank, and therefore may have difficulty with ultimate promotion to full.

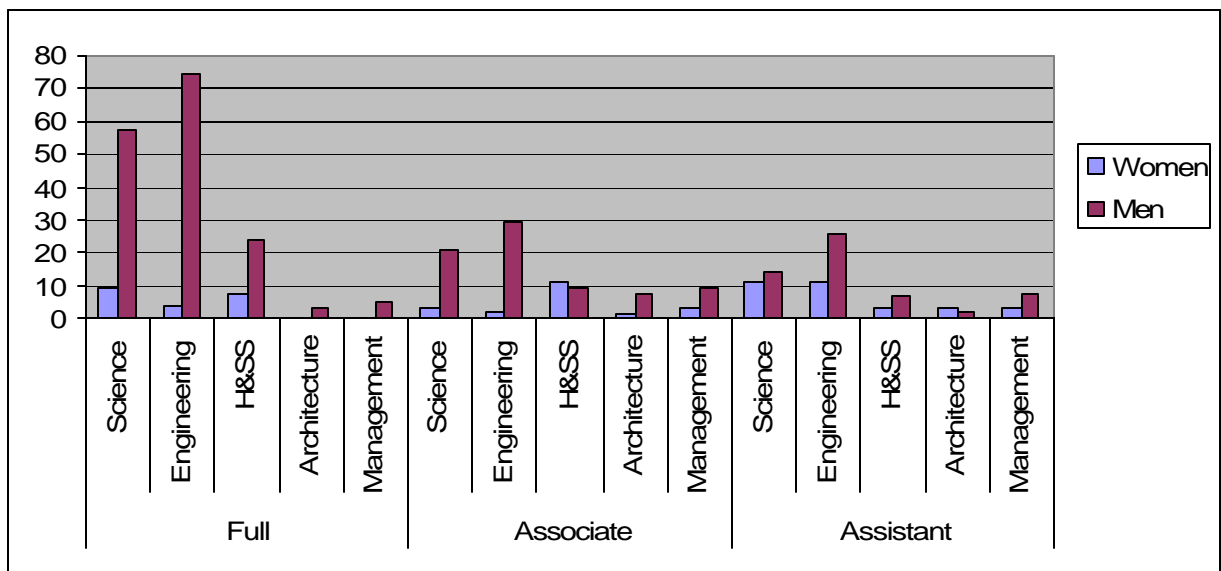


Figure 1. Distribution of women and men by rank and school - Fall, 2006

The most encouraging data occurs in the assistant professor ranks. For example, 44% of assistant professors in Science are women. This is due to an aggressive program of hiring diverse candidates over the past 5 years. In Engineering, 30% of assistant professors are women. These numbers are much higher than historical norms. Architecture, Management, and Humanities and Social Sciences also have significant numbers of women assistant professors.

Some women are relatively isolated, and may be the solo woman in their department (4 individuals). Two departments, Earth and Environmental Sciences and Cognitive Sciences have no women at all. For the rest, there are at least two women per department. Full data for the distribution of women faculty are contained in Tables 1(a)-(c) in the appendix.

Fig. 2 shows the generally rising percentage of women at the assistant professor rank as it has developed over the last three years. There have also been slight increases at the full professor level, with the institute average advancing from 10.3% to 11.4% women full professors.

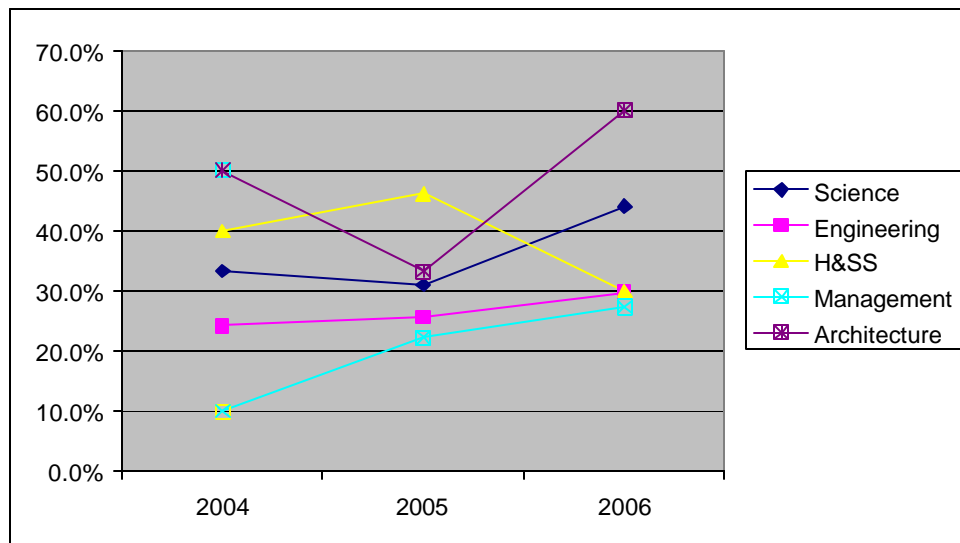


Fig. 2 Percentage of women assistant professors compared to men assistant professors

Rensselaer hires a substantial number of clinical faculty members, as detailed in Tables 2(a)-(c) in the Appendix. In 2006, clinical faculty were 16% of the total faculty. These faculty are primarily engaged in the teaching enterprise of the institution and do little or no research. They participate in and sometimes direct advising, curricular development, outreach, and other academic functions of the institution. Clinical faculty are hired with renewable contracts lasting one year.

Women are somewhat over-represented in the clinical faculty ranks at Rensselaer compared to their representation in the tenure and tenure-track ranks. This effect is most pronounced in the School of Science, where clinical women faculty made up 38% of all clinical faculty in 2006 while they were only 20% of the tenure and tenure-track faculty. The effect is not statistically significant due to the small number of women clinical faculty.

Promotion and Tenure Processes

During the two-year time period covered by this report, 25 faculty applied for promotion from Assistant Professor to Associate Professor with Tenure. Of these, 20 were granted and 5 denied for an Institute success rate of 80%. Only two women were in this group, one from the School of Engineering and the other from the School of Humanities and Social Sciences. Both were promoted and tenured. Due to the small numbers of women, no conclusions can be reached regarding the success rate of women. Detailed results are given in Tables 3(a) and 3(b) in the appendix. These tables provide a useful baseline for continued monitoring. In future, a cohort analysis using data from past years will be used to study the progress of women faculty through the transition to tenure.

In Tables 4(a) and 4(b), the review outcomes for promotion from Associate Professor to Full Professor are outlined. In the two-year time period, 9 men and 2 women were considered for promotion and all were promoted. This includes one woman from Science and one from Engineering. These data are from the Provost's office and represent cases that have advanced to the Institute level. It is possible that a case is never initiated because faculty are discouraged from applying, or that a case is stopped at the department or school level. Data on cases halted at an earlier stage will be gathered in the coming year.

Another important indicator of career advancement is years in rank at the associate professor level, as found in Tables 5(a)-(c). Two patterns emerge from the large body of data. In nearly all cases, the percent of women at the associate level for a given number of years is larger than the percent of men at that same level. Women are typically over-represented at the associate professor level. This effect could be the result of the relative low representation of women at the full professor level. Since the distribution of women is so skewed toward the lower ranks, a larger fraction of women are found in the associate ranks compared to men. Other studies, both nationally and at Rensselaer, indicate that women do in fact spend significantly more time as associate professors. The planned cohort analysis will help in clarifying this effect.

Tables 5(a)-(c) also show a number of men who have been at the rank of associate professor for 15 years or more. In 2006, there were 14 men in this category and only 2 women. The low numbers of women is not indicative of their eventual promotion to full professor, but rather a result of the low hiring and retention rate for women 20 years ago. Few women have been at the institute long enough to fall into this category.

Pipeline Issues

Tables 6(a) and (b) outline the voluntary attrition of faculty from the institute. These data include faculty who took positions elsewhere and exclude faculty who left because of retirement, medical leave, or denial of tenure or renewal. The data show an alarmingly high rate of attrition among women faculty. For the institute as a whole, 9.3% of women left in 2005 and 7.6% left in 2006. For men, the numbers are 2.3% and 2.6%. The disparity is actually worse than these numbers indicate, since most of the women who left were assistant professors while most of the men were full professors.

In the two years of the study, the School of Science was especially hard hit. Four women assistant professors and one woman associate professor departed voluntarily.

Because of the small numbers involved, it is difficult to draw statistically significant conclusions for the other schools. Attrition is a trend that will be carefully monitored by the Ramp-Up leadership team. Many of our efforts have been directed at preventing future departures of young women faculty.

At the other end of the pipeline, the news is very good. Rensselaer has mounted a serious effort to increase the diversity of faculty and that effort is starting to bear fruit. As shown in Tables 7(a)-(c) in the appendix, of the 18 assistant professors hired in the three year period, 8 were women, for a total of 44% women. Engineering also attracted new women hires, with 7 of the 19 assistant professors being women, a 37% rate. The other three schools were also on board with hiring women and the overall institute average in 2006 was 43%.

During the same period, 9 full professors were hired, some as Deans and Center Directors. Of these only one was a woman, who was hired as a Department Head. The pool of available women at the senior ranks is small; progress in this area has been slower.

Of course, if we do not succeed in plugging the leaks, no amount of inflow will be sufficient. We desire to bring women faculty into an environment in which they can grow and prosper, not one where they will suffer and leave. These data do not illuminate the reasons for their departure; our future efforts will be directed at discovering the reasons through interviews and acting to prevent future losses.

University Leadership

The presence of a group of women full professors on campus and the willingness of Rensselaer to hire women in as full professors has led to some gains in women's representation in leadership positions. Of special interest is the recent rise in the number of women serving as department heads, as shown in Figure 3. In 2006, 30% of department heads were women, including 3 women in Science and Engineering. In 2007, additional gains will be reported since we have just added a woman department head in Biology.

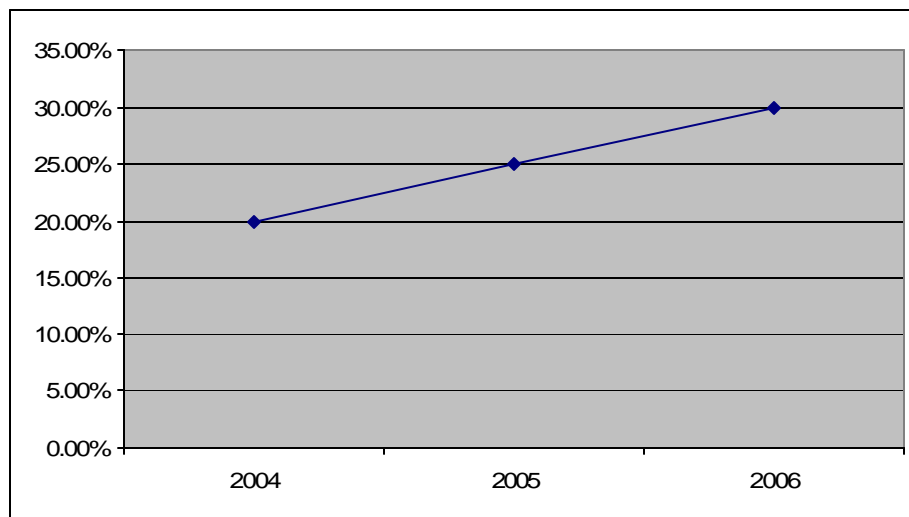


Fig. 3. Women Heads of Departments as a Percent of All Heads of Departments

Full details of women's representation in leadership positions are given in Tables 8(a)-(c) in the appendix. In some areas, women are missing. None of the 5 deans or 9 associate deans are women. Roughly 10% of center directors are women. At the institute administrative leadership level, including the President, Vice-Presidents, Provost, and Vice-Provosts, there are only 2 women.

The women full professors have made an effort to maintain a presence on the Institute Promotion and Tenure Committee. This committee is especially important in cases of appeals of P&T decisions, which are unusually common at Rensselaer. In the last three years, the P&T committee has been chaired by two different women.

Compensation and Resources

An examination of salary levels for women faculty reveals some persistent inequities as well as some improvements. Table 9 in the appendix shows data for each school in 2006. Women assistant professors earn nearly the same amount as their male counterparts in Science and Engineering, with their salaries at 97% and 99% of men's respectively. Women full professors in Science earn 10% more than men and women full professors in Engineering earn 10% less. This may reflect the different pool of male full professors in the two schools. In addition, there are a small number of women full professors in Engineering, most of who have only recently been promoted.

Fig. 4 summarizes the salaries of women as a percentage of men's salaries at Rensselaer by rank over time. In general, there is a gradual improvement in equity. The numbers are somewhat affected by the larger representation of women in the Humanities and Social Science as opposed to Engineering and Science.

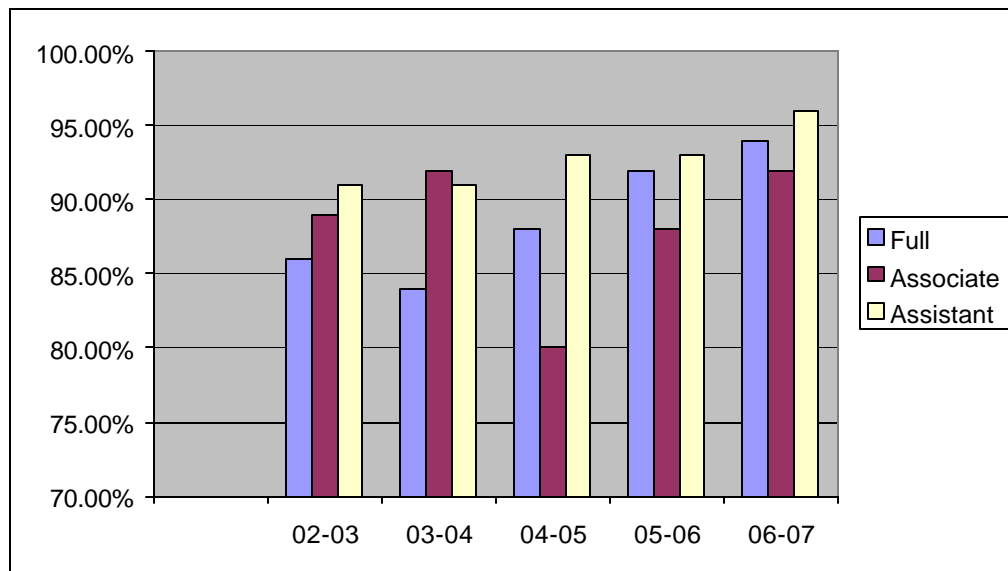


Fig. 4. Women Faculty Salaries as a Percentage of Men's Salaries by Rank and Year

Another resource that can have an influence on a women professor's career is access to space. Using data from Physical Facilities, an examination of the distribution of office and lab space by rank and department for 2004 was conducted. As shown in Table 11(a) in the appendix, office space in the School of Science is similar for men and women. Women full professors have larger offices than men full professors (234 ft² versus 223 ft²), while women associate professors have smaller offices than their male counterparts (163 ft² versus 171 ft²). At the assistant professor rank, women have 208 ft² while men have only 172 ft². To some extent, office space is a function of the building(s) where the department is housed. Women are not distributed evenly among the departments and this is a factor in the final average office space numbers.

In the School of Engineering, women faculty have less office space at all ranks. At the full professor level, women have 175 ft² while men have 214 ft². As noted earlier, many of the women full professors have only been recently promoted, and this may have an influence on allocation of office space.

Table 11(b) shows laboratory space averaged over all faculty, included both those who have labs and those who do not. The Mathematics and Decision Sciences Departments were excluded from these data because faculty do not require laboratory space in those departments. In Science, women generally have larger laboratories than men, except at the associate professor rank, where they have slightly smaller. The data at the full professor level is somewhat skewed by one woman who is director of a large facility. The lab space at the assistant professor level is nearly twice that of the men. One begins to be concerned for the men.

In the School of Engineering, women have less laboratory space than men at all ranks. The effect is pronounced at the assistant professor level, where women have only 272 ft² while men have 806 ft². Some of this may be due to the short amount of time some women assistant professors have been on campus – their labs have yet to be set up. To account for that effect, faculty lab space was also reported as the average over all faculty with lab space and the results are given in Table 11(c). Here again, women in Science fare well and women in Engineering still lag at the assistant and associate professor levels. Rensselaer is in the midst of a new space audit in Fall 07. When these results become available, we will re-examine the numbers to see if the potential problems in Engineering persist.

Summary and Conclusions

A set of baseline data on the status of women faculty at Rensselaer has been established. The data covers a wide range of indicators including distribution of faculty by gender, results of promotion and tenure processes, attrition, new hiring, the presence of women in leadership positions, and salary and space resources. Several problems have been identified, especially the high rate of attrition among women at the assistant professor level and the long years in rank of women associate professors. There are also signs of progress, including the large percentage of women among new hires and the steady increase in the number of women department heads. The salary gap between men and women is narrowing. Women are still very under-represented at the dean's level and in higher administration. In future years of the grant, the data will be replicated and will serve to document progress that Rensselaer makes in bringing women fully into the scholarly community.

Appendix

	Women			Men			Percent Women		
	Full	Associate	Assistant	Full	Associate	Assistant	Full	Associate	Assistant
School of Science Total	8	5	9	62	12	18	11.4%	29.4%	33.3%
Biology	3	0	4	5	2	3	37.5%	0.0%	57.1%
Chemistry & Chemical Biology	1	2	2	13	2	1	7.1%	50.0%	66.7%
Computer Science	0	1	2	9	4	7	0.0%	20.0%	22.2%
Earth & Environmental Sciences	0	0	0	5	1	1	0.0%	0.0%	0.0%
Mathematical Sciences	2	1	0	15	2	3	11.8%	33.3%	0.0%
Physics, Applied Physics, & Astronomy	2	1	1	15	1	3	11.8%	50.0%	25.0%
School of Engineering Total	3	2	8	77	28	25	3.8%	6.7%	24.2%
Biomedical Engineering	2	0	1	4	0	2	33.3%	na	33.3%
Chemical & Biological Engineering	0	0	1	8	1	2	0.0%	0.0%	33.3%
Civil & Environmental Engineering	0	0	2	6	3	3	0.0%	0.0%	40.0%
Decision Sciences & Engineering Systems	0	0	1	8	2	1	0.0%	0.0%	50.0%
Electrical, Computer & Systems Engineering	0	0	3	21	7	7	0.0%	0.0%	30.0%
Materials Science & Engineering	1	0	0	10	3	3	9.1%	0.0%	0.0%
Mechanical, Aerospace & Nuclear Engineering	0	2	0	20	12	7	0.0%	14.3%	0.0%
School of Humanities and Social Sciences Total	8	10	6	25	9	9	24.2%	52.6%	40.0%
The Arts	2	4	2	4	2	1	33.3%	66.7%	66.7%
Cognitive Science	0	0	0	7	2	3	0.0%	0.0%	0.0%
Economics	1	0	0	4	1	1	20.0%	0.0%	0.0%
Language, Literature & Communication	2	5	2	7	0	1	22.2%	100.0%	66.7%
Science & Technology Studies	3	1	2	3	4	3	50.0%	20.0%	40.0%
School of Management & Technology Total	0	3	1	6	10	9	0.0%	23.1%	10.0%
School of Architecture Total	1	1	1	5	8	1	16.7%	11.1%	50.0%
Institute Overall	20	21	25	175	67	62	10.3%	23.9%	28.7%

Table 1(a). Number and Percent of Women Tenured and Tenure Track Faculty by Rank and Department
As of Sept. 30, 2004
Advance Year 0

	Women			Men			Percent Women		
	Full	Associate	Assistant	Full	Associate	Assistant	Full	Associate	Assistant
School of Science - Total	9	3	9	60	15	20	13.0%	16.7%	31.0%
Biology	3	0	3	5	4	3	37.5%	0.0%	50.0%
Chemistry & Chemical Biology	1	1	2	12	2	2	7.7%	33.3%	50.0%
Computer Science	0	1	2	9	4	8	0.0%	20.0%	20.0%
Earth & Environmental Sciences	0	0	0	5	1	1	0.0%	0.0%	0.0%
Mathematical Sciences	3	0	0	15	3	2	16.7%	0.0%	0.0%
Physics, Applied Physics, & Astronomy	2	1	2	14	1	4	12.5%	50.0%	33.3%
School of Engineering-Total	4	2	9	72	29	26	5.3%	6.5%	25.7%
Biomedical Engineering	2	0	1	4	0	2	33.3%	na	33.3%
Chemical & Biological Engineering	0	0	1	8	1	2	0.0%	0.0%	33.3%
Civil & Environmental Engineering	0	1	1	3	4	4	0.0%	20.0%	20.0%
Decision Sciences & Engineering Systems	0	0	1	6	1	2	0.0%	0.0%	33.3%
Electrical, Computer & Systems Engineering	0	0	5	21	8	7	0.0%	0.0%	41.7%
Materials Science & Engineering	1	0	0	10	3	3	9.1%	0.0%	0.0%
Mechanical, Aerospace & Nuclear Engineering	1	1	0	20	12	6	4.8%	7.7%	0.0%
School of Humanities and Social Sciences – Total	8	10	6	26	9	7	23.5%	52.6%	46.2%
The Arts	2	4	2	4	2	1	33.3%	66.7%	66.7%
Cognitive Science	0	0	0	7	2	3	0.0%	0.0%	0.0%
Economics	1	0	0	4	1	1	20.0%	0.0%	0.0%
Language, Literature & Communication	2	5	2	7	0	1	22.2%	100.0%	66.7%
Science & Technology Studies	3	1	2	4	4	1	42.9%	20.0%	66.7%
School of Management & Technology – Total	0	3	2	6	12	7	0.0%	20.0%	22.2%
School of Architecture - Total	0	1	1	4	8	2	0.0%	11.1%	33.3%
Institute Overall	21	19	27	168	73	62	11.1%	20.7%	30.3%

Table 1(b). Number and Percent of Women Tenured and Tenure Track Faculty by Rank and Department
As of Sept. 30, 2005
Advance Year 1

	Women			Men			Percent Women		
	Full	Associate	Assistant	Full	Associate	Assistant	Full	Associate	Assistant
School of Science - Total	9	3	11	57	21	14	13.6%	12.5%	44.0%
Biology	3	0	4	4	4	4	42.9%	0.0%	50.0%
Chemistry & Chemical Biology	1	1	2	12	3	1	7.7%	25.0%	66.7%
Computer Science	0	1	2	8	6	6	0.0%	14.3%	25.0%
Earth & Environmental Sciences	0	0	0	5	1	1	0.0%	0.0%	0.0%
Mathematical Sciences	3	0	1	15	4	0	16.7%	0.0%	100.0%
Physics, Applied Physics, & Astronomy	2	1	2	13	3	2	13.3%	25.0%	50.0%
School of Engineering -Total	4	2	11	74	29	26	5.1%	6.5%	29.7%
Biomedical Engineering	2	0	1	3	1	4	40.0%	0.0%	20.0%
Chemical & Biological Engineering	0	0	1	9	1	1	0.0%	0.0%	50.0%
Civil & Environmental Engineering	0	1	1	4	4	3	0.0%	20.0%	25.0%
Decision Sciences & Engineering Systems	0	0	1	6	1	2	0.0%	0.0%	33.3%
Electrical, Computer & Systems Engineering	0	0	4	21	8	6	0.0%	0.0%	40.0%
Materials Science & Engineering	1	0	0	10	3	4	9.1%	0.0%	0.0%
Mechanical, Aerospace & Nuclear Engineering	1	1	3	21	11	6	4.5%	8.3%	33.3%
School of Humanities and Social Sciences – Total	8	11	3	24	9	7	25.0%	55.0%	30.0%
The Arts	2	4	1	4	2	2	33.3%	66.7%	33.3%
Cognitive Science	0	0	0	7	3	2	0.0%	0.0%	0.0%
Economics	1	0	0	3	1	1	25.0%	0.0%	0.0%
Language, Literature & Communication	2	6	1	6	0	0	25.0%	100.0%	100.0%
Science & Technology Studies	3	1	1	4	3	2	42.9%	25.0%	33.3%
School of Management & Technology – Total	0	3	3	5	9	8	0.0%	25.0%	27.3%
School of Architecture - Total	0	1	3	3	8	2	0.0%	11.1%	60.0%
Institute Overall	21	20	31	163	76	57	11.4%	20.8%	35.2%

Table 1(c). Number and Percent of Women Tenured and Tenure Track Faculty by Rank and Department
As of Sept. 30, 2006
Advance Year 2

	Tenured and Tenure Track			Non-Tenure Track			Non-Tenure Track as % All Women
	All	Women	% Women	All	Women	% Women	
School of Science	114	22	19.3%	11	5	45.5%	18.5%
Biology	17	7	41.2%	2	1	50.0%	12.5%
Chemistry & Chemical Biology	21	5	23.8%	1	0	0.0%	0.0%
Computer Science	23	3	13.0%	1	0	0.0%	0.0%
Earth & Environmental Sciences	7	0	0.0%	0	0	0.0%	0.0%
Mathematical Sciences	23	3	13.0%	3	2	66.7%	40.0%
Physics, Applied Physics, & Astronomy	23	4	17.4%	4	2	50.0%	33.3%
School of Engineering	143	13	9.1%	8	0	0.0%	0.0%
Biomedical Engineering	9	3	33.3%	0	0	0.0%	0.0%
Chemical & Biological Engineering	12	1	8.3%	0	0	0.0%	0.0%
Civil & Environmental Engineering	14	2	14.3%	1	0	0.0%	0.0%
Decision Sciences & Engineering Systems	12	1	8.3%	3	0	0.0%	0.0%
Electrical, Computer & Systems Engineering	38	3	7.9%	1	0	0.0%	0.0%
Materials Science & Engineering	17	1	5.9%	0	0	0.0%	0.0%
Mechanical, Aerospace & Nuclear Engineering	41	2	4.9%	3	0	0.0%	0.0%
School of Humanities and Social Sciences	67	24	35.8%	14	5	35.7%	17.2%
The Arts	15	8	53.3%	3	2	66.7%	20.0%
Cognitive Science	12	0	0.0%	5	1	20.0%	100.0%
Economics	7	1	14.3%	1	0	0.0%	0.0%
Language, Literature & Communication	17	9	52.9%	4	1	25.0%	10.0%
Science & Technology Studies	16	6	37.5%	1	1	100.0%	14.3%
School of Management & Technology	29	4	13.8%	9	1	11.1%	20.0%
School of Architecture	17	3	17.6%	5	1	20.0%	25.0%
Institute Overall	370	66	17.8%	47	12	25.5%	15.4%

Table 2(a). Department Faculty Gender Composition
As of Sept. 30, 2004
Advance Year 0

	Tenured and Tenure Track			Non-Tenure Track			Non-Tenure Track as % All Women
	All	Women	% Women	All	Women	% Women	
School of Science	116	21	18.1%	13	5	38.5%	19.2%
Biology	18	6	33.3%	2	1	50.0%	14.3%
Chemistry & Chemical Biology	20	4	20.0%	1	0	0.0%	0.0%
Computer Science	24	3	12.5%	2	0	0.0%	0.0%
Earth & Environmental Sciences	7	0	0.0%	0	0	0.0%	0.0%
Mathematical Sciences	23	3	13.0%	4	2	50.0%	40.0%
Physics, Applied Physics, & Astronomy	24	5	20.8%	4	2	50.0%	28.6%
School of Engineering	142	15	10.6%	8	0	0.0%	0.0%
Biomedical Engineering	9	3	33.3%	0	0	0.0%	0.0%
Chemical & Biological Engineering	12	1	8.3%	0	0	0.0%	0.0%
Civil & Environmental Engineering	13	2	15.4%	1	0	0.0%	0.0%
Decision Sciences & Engineering Systems	10	1	10.0%	3	0	0.0%	0.0%
Electrical, Computer & Systems Engineering	41	5	12.2%	1	0	0.0%	0.0%
Materials Science & Engineering	17	1	5.9%	0	0	0.0%	0.0%
Mechanical, Aerospace & Nuclear Engineering	40	2	5.0%	3	0	0.0%	0.0%
School of Humanities and Social Sciences	66	24	36.4%	18	7	38.9%	22.6%
The Arts	15	8	53.3%	3	2	66.7%	20.0%
Cognitive Science	12	0	0.0%	6	2	33.3%	100.0%
Economics	7	1	14.3%	2	0	0.0%	0.0%
Language, Literature & Communication	17	9	52.9%	6	2	33.3%	18.2%
Science & Technology Studies	15	6	40.0%	1	1	100.0%	14.3%
School of Management & Technology	30	5	16.7%	10	3	30.0%	37.5%
School of Architecture	16	2	12.5%	5	1	20.0%	33.3%
Institute Overall	370	67	18.1%	54	16	29.6%	19.3%

Table 2(b). Department Faculty Gender Composition
As of Sept. 30, 2005
Advance Year 1

	Tenured and Tenure Track			Non-Tenure Track			Non-Tenure Track as % All Women
	All	Women	% Women	All	Women	% Women	
School of Science	115	23	20.0%	13	5	38.5%	17.9%
Biology	19	7	36.8%	2	1	50.0%	12.5%
Chemistry & Chemical Biology	20	4	20.0%	1	0	0.0%	0.0%
Computer Science	23	3	13.0%	2	0	0.0%	0.0%
Earth & Environmental Sciences	7	0	0.0%	0	0	0.0%	0.0%
Mathematical Sciences	23	4	17.4%	4	2	50.0%	33.3%
Physics, Applied Physics, & Astronomy	23	5	21.7%	4	2	50.0%	28.6%
School of Engineering	146	17	11.6%	9	1	11.1%	5.6%
Biomedical Engineering	11	3	27.3%	0	0	0.0%	0.0%
Chemical & Biological Engineering	12	1	8.3%	0	0	0.0%	0.0%
Civil & Environmental Engineering	13	2	15.4%	1	0	0.0%	0.0%
Decision Sciences & Engineering Systems	10	1	10.0%	4	1	25.0%	50.0%
Electrical, Computer & Systems Engineering	39	4	10.3%	1	0	0.0%	0.0%
Materials Science & Engineering	18	1	5.6%	0	0	0.0%	0.0%
Mechanical, Aerospace & Nuclear Engineering	43	5	11.6%	3	0	0.0%	0.0%
School of Humanities and Social Sciences	62	22	35.5%	20	8	40.0%	26.7%
The Arts	15	7	46.7%	3	2	66.7%	22.2%
Cognitive Science	12	0	0.0%	6	2	33.3%	100.0%
Economics	6	1	16.7%	2	0	0.0%	0.0%
Language, Literature & Communication	15	9	60.0%	8	3	37.5%	25.0%
Science & Technology Studies	14	5	35.7%	1	1	100.0%	16.7%
School of Management & Technology	28	6	21.4%	13	3	23.1%	33.3%
School of Architecture	17	4	23.5%	5	1	20.0%	20.0%
Institute Overall	368	72	19.6%	60	18	30.0%	20.0%

Table 2(c). Department Faculty Gender Composition
As of Sept. 30, 2006
Advance Year 2

	# of Reviews		# of Approvals		# of Denials		Success rate	
	Men	Women	Men	Women	Men	Women	Men	Women
School of Science								
Biology	1	0	1	0	0	0		
Chemistry & Chemical Biology	0	0	0	0	0	0		
Computer Science	0	0	0	0	0	0		
Earth & Environmental Sciences	0	0	0	0	0	0		
Mathematical Sciences	2	0	1	0	1	0		
Physics, Applied Physics, & Astronomy	0	0	0	0	0	0		
Total - School of Science	3	0	2	0	1	0	66.7%	
	# of Reviews		# of Approvals		# of Denials		Success rate	
School of Engineering	Men	Women	Men	Women	Men	Women	Men	Women
Biomedical Engineering	0	0	0	0	0	0		
Chemical & Biological Engineering	0	0	0	0	0	0		
Civil & Environmental Engineering	0	1	0	1	0	0		
Decision Sciences & Engineering Systems	0	0	0	0	0	0		
Electrical, Computer & Systems Engineering	1	0	1	0	0	0		
Materials Science & Engineering	0	0	0	0	0	0		
Mechanical, Aerospace & Nuclear Engineering	1	0	1	0	0	0		
Total - School of Engineering	2	1	2	1	0	0	100.0%	100.0%
	# of Reviews		# of Approvals		# of Denials		Success rate	
School of Humanities and Social Sciences	Men	Women	Men	Women	Men	Women	Men	Women
The Arts	0	0	0	0	0	0		
Cognitive Science	0	0	0	0	0	0		
Economics	0	0	0	0	0	0		
Language, Literature & Communication	0	0	0	0	0	0		
Science & Technology Studies	2	0	1	0	1	0		
Total - School of H&SS	2	0	1	0	1	0	50.0%	
School of Management & Technology	0	0	0	0	0	0		
School of Architecture	1	0	0	0	1	0	0.0%	
Institute Total	8	1	5	1	3	0	62.5%	100.0%

Table 3(a). Tenure Review Outcomes by Gender
As of Sept. 30, 2005
Advance Year 1

	# of Reviews		# of Approvals		# of Denials		Success rate	
	Men	Women	Men	Women	Men	Women	Men	Women
School of Science								
Biology	1	0	1	0	0	0		
Chemistry & Chemical Biology	1	0	1	0	0	0		
Computer Science	3	0	2	0	1	0		
Earth & Environmental Sciences	0	0	0	0	0	0		
Mathematical Sciences	1	0	1	0	0	0		
Physics, Applied Physics, & Astronomy	2	0	2	0	0	0		
Total - School of Science	8	0	7	0	1	0	87.5%	
	# of Reviews		# of Approvals		# of Denials		Success rate	
School of Engineering	Men	Women	Men	Women	Men	Women	Men	Women
Biomedical Engineering	0	0	0	0	0	0		
Chemical & Biological Engineering	1	0	1	0	0	0		
Civil & Environmental Engineering	1	0	1	0	0	0		
Decision Sciences & Engineering Systems	0	0	0	0	0	0		
Electrical, Computer & Systems Engineering	1	0	1	0	0	0		
Materials Science & Engineering	0	0	0	0	0	0		
Mechanical, Aerospace & Nuclear Engineering	2	0	2	0	0	0		
Total - School of Engineering	5	0	5	0	0	0	100.0%	
	# of Reviews		# of Approvals		# of Denials		Success rate	
School of Humanities and Social Sciences	Men	Women	Men	Women	Men	Women	Men	Women
The Arts	0	0	0	0	0	0		
Cognitive Science	1	0	1	0	0	0		
Economics	0	0	0	0	0	0		
Language, Literature & Communication	0	1	0	1	0	0		
Science & Technology Studies	0	0	0	0	0	0		
Total - School of H&SS	1	1	1	1	0	0	100.0%	100.0%
School of Management & Technology	0	0	0	0	0	0		
School of Architecture	1	0	0	0	1	0	0.0%	
Institute Total	15	1	13	1	2	0	86.7%	100.0%

Table 3(b). Tenure Review Outcomes by Gender
As of Sept. 30, 2006
Advance Year 2

	# of Reviews		# of Approvals		# of Denials		Success rate	
	Men	Women	Men	Women	Men	Women	Men	Women
Science	0	1	0	1	0	0		100.0%
Engineering	1	1	1	1	0	0	100.0%	100.0%
Humanities and Social Science	1	0	1	0	0	0	100.0%	
Management & Technology	0	0	0	0	0	0		
Architecture	0	0	0	0	0	0		
Institute Total	2	2	2	2	0	0	100.0%	100.0%

Table 4(a). Promotion Review Outcomes by Gender – Associate Professor to Full Professor
Between Sept. 2004 and Sept. 2005
Advance Year 1

	# of Reviews		# of Approvals		# of Denials		Success rate	
	Men	Women	Men	Women	Men	Women	Men	Women
Science	0	0	0	0	0	0		
Engineering	5	0	5	0	0	0	100.0%	
Humanities and Social Science	1	0	1	0	0	0	100.0%	
Management & Technology	1	0	1	0	0	0	100.0%	
Architecture	0	0	0	0	0	0		
Institute Total	7	0	7	0	0	0	100.0%	

Table 4(b). Promotion Review Outcomes by Gender – Associate Professor to Full Professor
Between Sept. 2005 and Sept. 2006
Advance Year 2

Science	Women		Men	
Years in Rank	Number	% of Women	Number	% of Men
0-2	0	0	3	3.3%
3-5	4	18.2%	1	1.1%
6-8	0	0	2	2.2%
9-11	0	0	1	1.1%
12-14	0	0	0	0.0%
15 or more	0	0	4	4.3%
Engineering	Women		Men	
Years in Rank	Number	% of Women	Number	% of Men
0-2	0	0.0%	5	3.8%
3-5	0	0.0%	6	4.6%
6-8	1	7.7%	3	2.3%
9-11	0	0.0%	3	2.3%
12-14	1	7.7%	0	0.0%
15 or more	0	0.0%	7	5.4%
Humanities and Social Sciences	Women		Men	
Years in Rank	Number	% of Women	Number	% of Men
0-2	4	16.7%	2	4.7%
3-5	2	8.3%	3	7.0%
6-8	2	8.3%	0	0.0%
9-11	0	0.0%	1	2.3%
12-14	1	4.2%	1	2.3%
15 or more	0	0.0%	2	4.7%
Architecture	Women		Men	
Years in Rank	Number	% of Women	Number	% of Men
0-2	1	33.3%	0	0.0%
3-5	0	0.0%	0	0.0%
6-8	0	0.0%	0	0.0%
9-11	0	0.0%	0	0.0%
12-14	0	0.0%	0	0.0%
15 or more	0	0.0%	3	21.4%
Management	Women		Men	
Years in Rank	Number	% of Women	Number	% of Men
0-2	1	25.0%	1	4.0%
3-5	0	0.0%	3	12.0%
6-8	0	0.0%	1	4.0%
9-11	0	0.0%	0	0.0%
12-14	1	25.0%	1	4.0%
15 or more	0	0.0%	2	8.0%

Table 5(a). Years in Rank at the Associate Professor Level for Faculty
Hired as Assistant Professors
As of Sept. 30, 2004
Advance Year 0

Science	Women		Men	
Years in Rank	Number	% of Women	Number	% of Men
0-2	0	0.0%	5	5.3%
3-5	2	9.5%	1	1.1%
6-8	1	4.8%	2	2.1%
9-11	0	0.0%	0	0.0%
12-14	0	0.0%	1	1.1%
15 or more	0	0.0%	4	4.2%
Engineering	Women		Men	
Years in Rank	Number	% of Women	Number	% of Men
0-2	1	6.7%	7	5.5%
3-5	0	0.0%	7	5.5%
6-8	0	0.0%	2	1.6%
9-11	0	0.0%	1	0.8%
12-14	1	6.7%	2	1.6%
15 or more	0	0.0%	6	4.7%
Humanities & Social Sciences	Women		Men	
Years in Rank	Number	% of Women	Number	% of Men
0-2	3	12.5%	3	7.1%
3-5	2	8.3%	3	7.1%
6-8	2	8.3%	1	2.4%
9-11	1	4.2%	1	2.4%
12-14	0	0.0%	0	0.0%
15 or more	1	4.2%	2	4.8%
Architecture	Women		Men	
Years in Rank	Number	% of Women	Number	% of Men
0-2	1	50.0%	0	0.0%
3-5	0	0.0%	0	0.0%
6-8	0	0.0%	0	0.0%
9-11	0	0.0%	0	0.0%
12-14	0	0.0%	0	0.0%
15 or more	0	0.0%	3	21.4%
Management	Women		Men	
Years in Rank	Number	% of Women	Number	% of Men
0-2	1	20.0%	2	8.0%
3-5	0	0.0%	2	8.0%
6-8	0	0.0%	2	8.0%
9-11	0	0.0%	0	0.0%
12-14	1	20.0%	1	4.0%
15 or more	0	0.0%	2	8.0%

Table 5(b). Years in Rank at the Associate Professor Level for Faculty
Hired as Assistant Professors
As of Sept. 30, 2005
Advance Year 1

Science	Women		Men	
Years in Rank	Number	% of Women	Number	% of Men
0-2	0	0.0%	9	9.8%
3-5	2	8.7%	4	4.3%
6-8	1	4.3%	1	1.1%
9-11	0	0.0%	1	1.1%
12-14	0	0.0%	1	1.1%
15 or more	0	0.0%	3	3.3%
Engineering	Women		Men	
Years in Rank	Number	% of Women	Number	% of Men
0-2	1	5.9%	9	7.0%
3-5	0	0.0%	7	5.4%
6-8	0	0.0%	1	0.8%
9-11	0	0.0%	1	0.8%
12-14	0	0.0%	3	2.3%
15 or more	1	5.9%	6	4.7%
Humanities & Social Sciences	Women		Men	
Years in Rank	Number	% of Women	Number	% of Men
0-2	2	9.1%	2	5.0%
3-5	4	18.2%	4	10.0%
6-8	2	9.1%	1	2.5%
9-11	1	4.5%	0	0.0%
12-14	0	0.0%	1	2.5%
15 or more	1	4.5%	1	2.5%
Architecture	Women		Men	
Years in Rank	Number	% of Women	Number	% of Men
0-2	0	0.0%	0	0.0%
3-5	1	25.0%	0	0.0%
6-8	0	0.0%	0	0.0%
9-11	0	0.0%	0	0.0%
12-14	0	0.0%	0	0.0%
15 or more	0	0.0%	3	23.1%
Management	Women		Men	
Years in Rank	Number	% of Women	Number	% of Men
0-2	0	0.0%	1	4.5%
3-5	1	16.7%	3	13.6%
6-8	0	0.0%	2	9.1%
9-11	0	0.0%	0	0.0%
12-14	1	16.7%	1	4.5%
15 or more	0	0.0%	1	4.5%

Table 5(c). Years in Rank at the Associate Professor Level for Faculty
Hired as Assistant Professors
As of Sept. 30, 2006
Advance Year 2

	Assistant		Associate		Full		Total attrition		Total faculty		Percentage	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Biology	0	1	0	0	0	0						
Chemistry & Chemical Biology	0	0	0	0	1	0						
Computer Science	0	1	0	0	0	0						
Earth & Environmental Sciences	0	0	0	0	0	0						
Mathematical Sciences	0	0	0	0	0	0						
Physics, Applied Physics, & Astronomy	0	0	0	0	0	0						
Total - School of Science	0	2	0	0	1	0	1	2	116	21	0.9%	9.5%
Biomedical Engineering	0	0	0	0	0	0						
Chemical & Biological Engineering	0	0	0	0	0	0						
Civil & Environmental Engineering	0	0	0	0	1	0						
Decision Sciences & Engineering Systems	0	0	0	0	1	0						
Electrical, Computer & Systems Engineering	0	0	0	0	0	0						
Materials Science & Engineering	0	0	0	0	1	0						
Mechanical, Aerospace & Nuclear Engineering	0	0	0	0	0	0						
Total - School of Engineering	0	0	0	0	3	0	3	0	142	15	2.1%	0.0%
The Arts	0	0	0	0	0	0						
Cognitive Science	0	0	0	0	0	0						
Economics	0	0	0	0	0	0						
Language, Literature & Communication	0	0	0	0	0	0						
Science & Technology Studies	0	0	0	0	0	0						
Total - School of H&SS	0	0	0	0	0	0						
School of Management & Technology	1	0	0	0	1	0	2	0	30	5	6.7%	0.0%
School of Architecture	0	0	0	1	1	1	1	2	16	2	6.3%	100.0%
Institute Total	1	2	0	1	6	1	7	4	304	43	2.3%	9.3%

Table 6(a). Voluntary, Non-retirement Attrition, by Rank and Gender
As of Sept. 30, 2005
Advance Year 1

	Assistant		Associate		Full		Total attrition		Total faculty		Percentage	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Biology	0	1	0	0	1	0						
Chemistry & Chemical Biology	0	1	0	1	1	0						
Computer Science	0	0	0	0	0	0						
Earth & Environmental Sciences	0	0	0	0	0	0						
Mathematical Sciences	0	0	0	0	0	0						
Physics, Applied Physics, & Astronomy	0	0	0	0	0	0						
Total - School of Science	0	2	0	1	2	0	2	3	115	23	1.7%	13.0%
Biomedical Engineering	0	0	0	0	0	0						
Chemical & Biological Engineering	0	0	0	0	1	0						
Civil & Environmental Engineering	0	0	0	0	0	0						
Decision Sciences & Engineering Systems	0	0	0	0	0	0						
Electrical, Computer & Systems Engineering	0	1	0	0	0	0						
Materials Science & Engineering	0	0	0	0	1	0						
Mechanical, Aerospace & Nuclear Engineering	0	0	0	0	1	0						
Total - School of Engineering	0	1	0	0	3	0	3	1	146	17	2.1%	5.9%
The Arts	0	0	0	0	0	0						
Cognitive Science	0	0	0	0	0	0						
Economics	0	0	0	0	1	0						
Language, Literature & Communication	0	0	0	0	2	0						
Science & Technology Studies	0	1	1	0	0	0						
Total - School of H&SS	0	1	1	0	3	0	4	1	62	22	6.5%	4.5%
School of Management & Technology	0	0	0	0	0	0						
School of Architecture	0	0	0	0	0	0	0	0	17	4	0.0%	0.0%
Institute Total	0	4	1	1	8	0	9	5	340	66	2.6%	7.6%

Table 6(b). Voluntary, Non-retirement Attrition, by Rank and Gender
As of Sept. 30, 2006
Advance Year 2

	Assistant			Associate			Full		
	Men	Women	% Women	Men	Women	% Women	Men	Women	% Women
Biology	1	2	67%	0	0		0	0	
Chemistry & Chemical Biology	1	1	50%	0	0		0	1	100%
Computer Science	0	0		0	0		0	0	
Earth & Environmental Sciences	0	0		0	0		0	0	
Mathematical Sciences	0	0		0	0		0	0	
Physics, Applied Physics, & Astronomy	1	0	0%	1	0	0%	1	0	0%
Total - School of Science	3	3	50%	1	0	0%	1	1	50%
Biomedical Engineering	0	1	100%	0	0		0	0	
Chemical & Biological Engineering	0	0		0	0		0	0	
Civil & Environmental Engineering	2	0	0%	0	0		0	0	
Decision Sciences & Engineering Systems	0	0		0	0		0	0	
Electrical, Computer & Systems Engineering	0	1	100%	0	0		0	0	
Materials Science & Engineering	0	0		0	0		0	0	
Mechanical, Aerospace & Nuclear Engineering	0	0		0	0		0	0	
Total - School of Engineering	2	2	50%	0	0		0	0	
The Arts	1	0	0%	0	0		0	0	
Cognitive Science	1	0	0%	0	0		0	0	
Economics	0	0		0	0		0	0	
Language, Literature & Communication	0	1	100%	0	1	100%	0	0	
Science & Technology Studies	0	0		0	0		0	0	
Total - School of H&SS	2	1	33%	0	1	100%	0	0	
School of Management & Technology	1	0	0%	0	0		0	0	
School of Architecture	0	0		0	0		0	0	
Institute Overall	8	6	43%	1	1	50%	1	1	50%

Table 7(a). New Hires by Rank and Gender
As of Sept. 30, 2004
Advance Year 0

	Assistant			Associate			Full		
	Men	Women	% Women	Men	Women	% Women	Men	Women	% Women
School of Science									
Biology	2	0	0%	0	0		0	0	
Chemistry & Chemical Biology	1	0	0%	0	0		0	0	
Computer Science	1	1	50%	0	0		0	0	
Earth & Environmental Sciences	0	0		0	0		0	0	
Mathematical Sciences	0	0		0	0		0	0	
Physics, Applied Physics, & Astronomy	1	0	0%	0	0		2	0	0%
Total - School of Science	5	1	17%	0	0		2	0	0%
Biomedical Engineering	0	0		0	0		0	0	
Chemical & Biological Engineering	0	0		0	0		0	0	
Civil & Environmental Engineering	2	0	0%	0	0		0	0	
Decision Sciences & Engineering Systems	1	0	0%	0	0		0	0	
Electrical, Computer & Systems Engineering	1	2	67%	0	0		0	0	
Materials Science & Engineering	0	0		0	0		1	0	
Mechanical, Aerospace & Nuclear Engineering	0	0		0	0		0	0	
Total - School of Engineering	4	2	33%	0	0		1	0	0%
The Arts	0	0		0	0		0	0	
Cognitive Science	0	0		0	0		0	0	
Economics	0	0		0	0		0	0	
Language, Literature & Communication	0	0		0	0		0	0	
Science & Technology Studies	0	0		0	0		0	0	
Total - School of H&SS	0	0		0	0		0	0	
School of Management & Technology	1	1	50%	2	0	0%	1	0	0%
School of Architecture	2	2	50%	0	1	100%	0	0	
Institute Overall	12	6	33%	2	1	33%	4	0	0%

Table 7(b). New Hires by Rank and Gender
As of Sept. 30, 2005
Advance Year 1

	Assistant			Associate			Full		
	Men	Women	% Women	Men	Women	% Women	Men	Women	% Women
Biology	1	1	50%	0	0		0	0	
Chemistry & Chemical Biology	0	1	100%	0	0		0	0	
Computer Science	1	0	0%	0	0		0	0	
Earth & Environmental Sciences	0	0		0	0		0	0	
Mathematical Sciences	0	1	100%	0	0		0	0	
Physics, Applied Physics, & Astronomy	0	1	100%	0	0		0	0	
Total - School of Science	2	4	67%	0	0		0	0	
Biomedical Engineering	3	0	0%	0	0		0	0	
Chemical & Biological Engineering	0	0		0	0		1	0	
Civil & Environmental Engineering	0	0		0	0		0	0	
Decision Sciences & Engineering Systems	0	0		0	0		0	0	
Electrical, Computer & Systems Engineering	0	0		0	0		0	0	
Materials Science & Engineering	1	0	0%	0	0		1	0	0%
Mechanical, Aerospace & Nuclear Engineering	2	3	60%	0	0		1	0	
Total - School of Engineering	6	3	33%	0	0		3	0	0%
The Arts	1	0	0%	0	0		0	0	
Cognitive Science	0	0		0	0		0	0	
Economics	0	0		0	0		0	0	
Language, Literature & Communication	0	0		0	0		0	0	
Science & Technology Studies	1	0		0	0		0	0	
Total - School of H&SS	2	0	0%	0	0		0	0	
School of Management & Technology	3	2	40%	0	0		0	0	
School of Architecture	0	1	100%	0	0		0	0	
Institute Overall	13	10	43%	0	0		3	0	0%

Table 7(c). New Hires by Rank and Gender
As of Sept. 30, 2006
Advance Year 2

	All Faculty	Number of Women Faculty					
		All	Science	Engineering	H&SS	Architecture	Management
Tenured Full Professors	175	20	8	3	8	1	0
Department Heads	20	4	2	0	2	0	0
Deans	5	0	0	0	0	0	0
Associate Deans	9	0	0	0	0	0	0
Center Directors	21	2	2	0	0	0	0
President, Vice-Presidents, Provost, Vice-Provosts	10	2					
Promotion and Tenure Committee	8	1	1	0	0	0	0

Table 8(a). Leadership Positions by Gender, Sept. 30, 2004
Advance Year 0

	All Faculty	Number of Women Faculty					
		All	Science	Engineering	H&SS	Architecture	Management
Tenured Full Professors	168	21	9	4	8	0	0
Department Heads	20	5	2	0	3	0	0
Deans	5	0	0	0	0	0	0
Associate Deans	9	0	0	0	0	0	0
Center Directors	21	2	2	0	0	0	0
President, Vice-Presidents, Provost, Vice-Provosts	10	2					
Promotion and Tenure Committee	8	1	1	0	0	0	0

Table 8(b). Leadership Positions by Gender, Sept. 30, 2005
Advance Year 1

	All Faculty	Number of Women Faculty					
		All	Science	Engineering	H&SS	Architecture	Management
Tenured Full Professors	163	21	9	4	8	0	0
Department Heads	20	6	2	1	3	0	0
Deans	5	0	0	0	0	0	0
Associate Deans	9	0	0	0	0	0	0
Center Directors	21	2	2	0	0	0	0
President, Vice-Presidents, Provost, Vice-Provosts	8	2					
Promotion and Tenure Committee	8	3	0	1	2	0	0

Table 8(c). Leadership Positions by Gender, Sept. 30, 2006
Advance Year 2

	Women			Men			Women's Salaries as percent of Men's Salaries		
	Full	Associate	Assistant	Full	Associate	Assistant	Full	Associate	Assistant
Science	\$119,975	\$76,813	\$70,801	\$108,614	\$82,764	\$73,154	110.5%	92.8%	96.8%
Engineering	\$107,923	\$86,300	\$78,485	\$119,134	\$85,066	\$79,594	90.6%	101.5%	98.6%
Humanities and Social Sciences	\$94,441	\$67,856	\$49,834	\$98,609	\$57,710	\$55,509	95.8%	117.6%	89.8%
Management & Technology		\$99,613	\$98,786	\$146,368	\$118,635	\$100,351		84.0%	98.4%
Architecture		\$83,950	\$71,523	\$119,663	\$80,878	\$60,516		103.8%	118.2%
Institute Overall - All Ranks	\$82,306			\$96,014			85.7%		

Table 9. Faculty Salaries by Rank and Gender, Sept. 30, 2006
Advance Year 2

Academic Year	Women's Salaries as percent of Men's Salaries			
	Full	Associate	Assistant	Overall
02-03	86.0%	89.0%	91.0%	81.0%
03-04	84.0%	92.0%	91.0%	81.0%
04-05	88.0%	80.0%	93.0%	80.0%
05-06	92.0%	88.0%	93.0%	83.0%
06-07	94.0%	92.0%	96.0%	86.0%

Table 10. Faculty Salaries by Rank and Gender over Time

	<u>Women</u>			<u>Men</u>		
	Full	Associate	Assistant	Full	Associate	Assistant
School of Science						
Biology	261			268	156	239
Chemistry & Chemical Biology		144	247	206	174	175
Computer Science		169	167	261	194	171
Earth & Environmental Sciences				254	138	170
Mathematical Sciences	182	169		183	137	135
Physics, Applied Physics, & Astronomy		170	170	216	203	189
Overall - School of Science	234	163	208	223	171	172
School of Engineering						
Biomedical Engineering	193			163		165
Chemical & Biological Engineering				229		150
Civil & Environmental Engineering		139	139	163	156	189
Decision Sciences & Engineering Systems			151	191	151	151
Electrical, Computer & Systems Engineering			164	238	157	155
Materials Science & Engineering	139			233	140	141
Mechanical, Aerospace & Nuclear Engineering		160		199	179	165
Overall - School of Engineering	175	153	155	214	165	161

Table 11(a). Faculty Office Space by Rank, Gender, and School (in ft²)
As of Sept. 30, 2004
Advance Year 0

	Women			Men		
	Full	Associate	Assistant	Full	Associate	Assistant
School of Science						
Biology	2428			286	480	509
Chemistry & Chemical Biology		1313	1409	1525	644	1140
Computer Science		372	569	197	351	204
Earth & Environmental Sciences				1081	1561	1498
Mathematical Sciences	0	0		0		0
Physics, Applied Physics, & Astronomy		0	719	805	1277	443
Overall - School of Science	2428	562	935	873	650	454
School of Engineering						
Biomedical Engineering	376			630		1017
Chemical & Biological Engineering				987	539	1158
Civil & Environmental Engineering		673	816	900	738	149
Decision Sciences & Engineering Systems						
Electrical, Computer & Systems Engineering			0	1281	402	817
Materials Science & Engineering	2400			1905	1553	1059
Mechanical, Aerospace & Nuclear Engineering		211		706	554	857
Overall - School of Engineering	1051	365	272	1131	659	806

Table 11(b). Faculty Laboratory Space by Rank, Gender, and School (in ft²)
Average over all faculty
As of Sept. 30, 2004
Advance Year 0

	Women			Men		
	Full	Associate	Assistant	Full	Associate	Assistant
School of Science						
Biology	3642			1142	480	509
Chemistry & Chemical Biology		1313	1409	1694	644	1140
Computer Science		372	569	393	351	487
Earth & Environmental Sciences				1081	1561	1498
Mathematical Sciences						
Physics, Applied Physics, & Astronomy			719	1127	1277	443
Overall - School of Science	3642	843	935	1228	650	443
School of Engineering						
Biomedical Engineering	752			630		1017
Chemical & Biological Engineering				1481	539	1158
Civil & Environmental Engineering		673	816	1801	1107	447
Decision Sciences & Engineering Systems						
Electrical, Computer & Systems Engineering				1675	603	1429
Materials Science & Engineering	2400			1905	1553	1059
Mechanical, Aerospace & Nuclear Engineering		422		989	665	857
Overall - School of Engineering	1576	548	816	1479	824	1030

Table 11(c). Faculty Laboratory Space by Rank, Gender, and School (in ft²)
Average over faculty with laboratory space
As of Sept. 30, 2004
Advance Year 0

Appendix B – Transcript Codes

1. **Career Path**
 - a. career advancement barrier
 - b. career advancement supports
 - c. career goals
 - d. career motivations
 - e. Career Package
 - f. career sources
 - g. career transitions
 1. Choice for area
 2. Choice for Children
 - h. career turning point
 - i. Comparisons
 - j. Expectations
 - k. future direction
 - l. history
 - m. path to current work
 - n. role of chance
 - o. role of choice
 - p. role of circumstance
 1. Trailing
 - q. Role of Opportunity
 - r. Tenure
 - s. Current Status – Assistant
 1. Time at RP
 - t. Current Status - Associate
 1. Time at RPI
 - u. Current Status - Professor
 1. tenure issues
 2. Tenured at RPI
 3. Tenured prior to RPI
2. **Career Specifics**
 - a. Research Focus
 - b. Teaching Focus
3. **Daily Work**
 - a. advantages of work situation
 - b. autonomy in work situation
 - c. Climate
 - d. collegial expectations
 - e. collegial norms
 - f. community at work
 - g. disadvantages of work situation
 - h. Distribution of Teaching vs. Research
 - i. identity and work
 - j. leadership
 - k. Logistics of DW - common issues
1. Information
2. Management skills
3. Expectations
- l. Resources
 1. work - life
 2. Research Funding Resources
 3. time commitments
 4. workload patterns
- m. department difficulties
4. **Events**
 - a. Colloquia
 - b. Kick-off event
 1. Webcast of event
 - c. Retreat
 - d. Speed networking
5. **Future Goals**
6. **Gender Issues**
 - a. choices
 - b. resources
7. **Inappropriate examples**
8. **Need vs actual**
 - a. does fit need
 - b. does not fit need
9. **Non-participation**
10. **Off the record**
11. **politics**
12. **Project Activities**
 - a. Advisory Board
 - b. Career Campaign Grants
 - c. Application
 - d. Committee
 - e. Purpose
 - f. Faculty Coach
 - g. Interventions
 - h. Mentoring Workshop
 - i. Pipeline Search
 - j. Department Grant
 1. Role
 2. Review Committee
13. Provost Luncheons
14. Toolkit for Cultural Change
15. Webcast
16. WL Balance Workshop
17. Project Involvement & Results
18. **RAMP-UP COMMENTS**
 - a. Negative comment
 - b. Positive Comment
 - c. Timing

- 19. **RAMP-UP DEVELOPMENT**
 - a. Connected to Project through Cheryl
 - b. Connected to Project through Debbie
 - c. Part of Process
- 20. **RAMP-UP Evidence of change**
- 21. **Representation of Women**
- 22. **RPI Environment**
 - a. Department
 - 1. power
 - 2. values
 - b. Individual
 - 1. power
 - 2. value
 - c. RPI
 - 1. power
 - 2. connection to valued work
 - 3. connection to people
 - 4. level of power
 - 5. values
 - d. School
 - 1. values
 - 2. power
- 23. **Structure**
 - a. For Collaboration
 - b. For Promotion and Tenure
 - c. For Support
 - d. Mentoring
 - e. power
 - f. Resources
- 24. **Support**
 - a. career mentoring
 - b. Collegial contact
 - 1. Inside RPI
 - 2. Outside RPI
 - c. Mentors
 - 1. Location - outside RPI
 - 2. location inside RPI
 - 3. Process
 - 4. Purpose
- 25. **University Impact**
 - a. Alignment to values
- 26. **WL Balance**
 - a. Dual Career - husband
 - b. Dual Career - Wife
 - c. Single Career - Female
 - d. Single Career Male
 - e. work-life balance