



# Engineering the future:

## How the WE@RIT programme is encouraging more women into the sector

The Kate Gleason College of Engineering at Rochester Institute of Technology (RIT) is the only engineering college in the United States to be named solely after a woman engineer. Inspired by Kate Gleason's legacy as an innovative and entrepreneurial scholar, the Women in Engineering at RIT (WE@RIT) programme was initiated by Professor of Mechanical Engineering Margaret Bailey in 2003. Since then, it has become a bastion of support for female students in an academic field that remains even now, vastly male-dominated.

Since its inception in 2003, the Women in Engineering at Rochester Institute of Technology (WE@RIT) programme has directly led to an increase in female students at the Kate Gleason College of Engineering at the institution, and the setting up of hugely successful projects such as the Establishing the Foundation for Future Organizational Reform and Transformation (EFFORT@RIT) and Advancement of Women Faculty (AdvanceRIT). WE@RIT continues to act today as an example for other

science, technology, engineering and mathematics (STEM) departments across the United States and beyond, proving that it is possible to change campus culture through well-planned and well-led strategic policies. We caught up with Founder of WE@RIT Professor Margaret Bailey to find out a bit more.

*Hi Margaret! Can you tell us a little bit more about the WE@RIT, its core mission and heritage and your previous leadership role?*

I led the creation of the programme 'WE@RIT', which is dedicated to expanding the representation of women engineers and leaders within the engineering profession. In support of this mission, WE@RIT provides opportunities for girls and young women to explore engineering, create an engineering community and lead within an engineering environment. I served as the Founding Executive Director from 2003-2011 during which time WE@RIT received the 'WEPAN 2008 Women in Engineering Program Award'



The AdvanceRIT project involves initiatives aimed at refining university structures and practices. In the spring of 2018, AdvanceRIT hosted a salary workshop for RIT faculty titled: "Let's Talk about Money: Understanding RIT Pay Practices". Participants explored salary-related resources which could help to shape future thinking and discussions regarding salary. They also discussed what RIT has learned from past studies regarding faculty salary. All the survey respondents agreed with the following: "This session enhanced the way I think about the issues/topics discussed."

The AdvanceRIT project involves cultural change focused workshops. Here, Dr Bailey is facilitating a bystander awareness and action workshop in the fall of 2016 which was attended by a large audience of women and men on the RIT faculty and staff. Over 80% of participants asked for more workshops to continue to learn how to become an effective and active bystander. The two-week after-event survey revealed that 100% of respondents agreed with the following: "I think I can make a difference in making the campus more inclusive by being an active bystander."

(<http://www.wepan.org/>). During my leadership, the Kate Gleason College witnessed a three-fold increase in the number of incoming female students annually (from approximately 50 to 150). In addition, external funding for the organisation reached an annual level of \$400K.

As the Executive Director, I advised the Dean on issues related to gender diversity within the college; created strategies with Admissions to improve recruitment of women engineering students; managed programme staff including a full-time programme manager; oversaw financial activities; created/maintained a governance body; established key partnerships; prepared successful funding

## In academic fields, going for tenure occurs at the same time as we are having children, and women remain the primary care-giver in most cases.

proposals; and created a thorough programme evaluation system.

*Can you explain your current roles as the Senior Faculty Associate to the Provost for ADVANCE and Principal Investigator (PI) and co-chair for the President's Commission on Women?* I serve as the PI of the NSF ADVANCE Institutional Transformation project at RIT titled 'Creating Opportunity Networks for Engagement and Collective Transformation: Increasing the Representation and Advancement of Women Faculty at RIT' or AdvanceRIT (<http://nsfadvance.rit.edu/>).

The other positions you mention closely align with this effort. The AdvanceRIT project aims to increase the representation and advancement of female STEM faculty at RIT through

a set of strategic initiatives focused on refining campus culture, improving career navigation and creating new institutional structures. Complementary social science research efforts adapt interventions to address the needs of key sub-populations including women of colour and deaf and hard-of-hearing women faculty.

*What are your personal achievements and highlights at RIT?* Significant grassroots engagement in AdvanceRIT's work over the past years has added positive and amplifying energy to the programme, helping to demonstrate the ongoing necessity and value of the work, while engaging a wider group of RIT faculty. Policy and practice changes in support of managing work-life integration have also occurred. AdvanceRIT has been a model of the organisational agility that is a part of the university's strategic plan.

*What challenges might women face in STEM education and careers? Would you say that these challenges have dramatically changed since you were studying and starting out in your career?*

Isolation and cultural/climate-related issues and challenges around work-life integration are rife. In academic fields, going for tenure occurs at the same time as we are having children, and women remain the primary care-giver in most cases. In addition, some fields are still male-dominated, so there are a lack of role models for both students and faculty.

When I was an undergraduate at Pennsylvania State, there was no women faculty in my STEM classes. The Society



Dr Margaret Bailey has been on the faculty at RIT in Mechanical Engineering since 2003.



Over the past five years, the AdvanceRIT project has hosted over 30 workshops focused on cultural change through unconscious bias education. Many of these sessions have used interactive theatre as the delivery approach. In the academic year of 2017/2018, nearly 400 participants from the RIT faculty and staff attended one of the workshops.

## Cultural change efforts often challenge people to be reflective, sometimes a bit vulnerable, and open to the possibility of alternative models of behaviour.

of Women Engineers (SWE) had recently started but the programming was minimal. We actually thought it was strange that they had programmes for us, back then, people did not talk about it. Currently, 25% of faculty are women in my department. The numbers have changed dramatically and so have programmes and initiatives focused on work-life integration, reducing isolation and supporting building community networks for women faculty and students.

*What has your personal experience been as a woman in a leading role?*

It has been wonderful to work with a team of predominantly women leaders, and many energised male leaders on campus around issues focused on inclusivity. Leading an institutional transformation project is challenging. Some of the things I have had to learn along the way include financial and managerial type skills and knowledge, but they also include things that I find exciting and very complex. Things like cultural change and changing structures within the university.

*Prior to joining the RIT, you were an Assistant and Associate Professor at the United States Military Academy located in West Point, New York.*

*You created the first student section of the SWE to exist at West Point and served as its faculty advisor – can you tell us about your time there?*

I was at West Point for five years and the students were great to work with. It was very male-dominated. There were about ten civilian women on the whole faculty, and being a young civilian woman, I would get a lot of attention. I sometimes felt as if I was in the spotlight.

West Point was created, designed and refined over the years to be a place where leadership development happens. A vital part of leadership development is the presence of role models around students. I looked around myself, to the students who were amazing young people and faculty colleagues who had been in the military for many years and I found many role models to also watch and learn from. I think I spent those five years transforming who I was, and what that model of leadership looked like for me.

*You have received many awards in recognition of leadership and significant contributions in supporting gender diversity initiatives, such as the Maria Mitchell Women in Science*

*Award, Edwina Award for Gender Diversity, and most recently, the Isaac Jordan Award for Inclusion and Pluralism – how do these awards and events help celebrate and promote women in science?*

They are very visible; symbolically and politically they highlight accomplishments and achievements, and often encourage other women and men to do this kind of work. The simple exercise of putting together packets for these awards require a great deal of effort and helps the nominee or the person doing the nomination to tell their own story clearly. This helps with self-awareness and how to talk about impacts that have been made.

*Can you tell us about the NSF Pathways Project and the research investigations in relation to the topic of gender within STEM? What did you establish with this project and how did it create an impact?*

Since 2008, I have served as the RIT lead researcher on a cross-university effort to investigate the relationship between undergraduate engineering student participation in cooperative (co-op) educational experiences and self-efficacy development. The NSF Pathways

Project involves researchers from RIT, Northeastern University (lead), Virginia Tech and the University of Wyoming. The overarching model for the study proposes that self-efficacy is based on the impact of students' demographic characteristics, the effect of work experience and the contextual support provided by the university. This research has resulted in several award-winning publications and findings verify the pathways model. Academic self-efficacy and contextual support in all time periods are found to be critical to retention. Contextual support is found to be particularly important to women.

*How important were both the Establishing the Foundation for Future Organizational Reform and Transformation (EFFORT@RIT) and Advancement of Women Faculty (AdvanceRIT) projects at RIT?*

Extremely important! The EFFORT grant was the catalyst for RIT obtaining the much larger institutional transformation grant. It involved objective data, working with human resources to collect the data, as well as the creation of the climate survey to collect and analyse job satisfaction type data, as well as



Here, RIT faculty participate in a mentoring workshop in the spring of 2018 which Dr Bailey co-facilitated. Participants explored different models of mentoring learned how to design and implement a networked mentoring programme.

benchmarking where RIT's practices and policies compared with other schools'. Without the EFFORT grant, AdvanceRIT may not have been possible.

*What needs to be done to ensure that women continue to enter STEM education and careers?*

Efforts need to continue as long as women are under-represented in these areas, efforts focused on reducing isolation and promoting the growth of networks and cultural change for all members of the campus community. I would say out of all of those, cultural change is the most important and the most difficult. Cultural change efforts often challenge people to be reflective, sometimes a bit vulnerable and open to the possibility of alternative models of behaviour. This type of organisational development is challenging to create, and administer; however, the results can be well worth the effort.

**ADVANCERIT**  
Reimagining our Careers and Campus Culture

Rochester Institute of Technology  
One Lomb Memorial Drive,  
Rochester, NY 14623-5603  
USA

**E:** [Margaret.Bailey@rit.edu](mailto:Margaret.Bailey@rit.edu)

**T:** +1 585 475 2960

**W:** [www.rit.edu/](http://www.rit.edu/)

**W:** [www.rit.edu/kgcoe/staff/margaret-bailey](http://www.rit.edu/kgcoe/staff/margaret-bailey)

**W:** <https://nsfadvance.rit.edu/>