BROADENING PARTICIPATION

Improving Gender Composition in Computing

Combining academic and industry representation, the NCWIT Pacesetters program works to increase the participation of girls and women in computing.

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What gets measured gets done." Taking this maxim to heart, a group of highly committed member organizations from the National Center for Women & Information Technology (NCWIT) formed a nationwide U.S. program "Pacesetters." Twenty-four academic and corporate organizations committed to adding 1,000 "Net New Women" to the U.S. computing talent pool by 2012.

Net New Women are technical women who would otherwise not have pursued or remained in computing careers. These are the women who have little or incorrect information about computing careers; who never experienced an engaging introduction that sparked their interest in computing; who had an interest, but left because no one encouraged them and told them they could succeed in computing; or who switched to a different career after tiring of the isolation or career stagnation they experienced. Understanding the urgency of this situation, NCWIT Pacesetters are creating a model for change that they hope will finally "move the needle," both within organizations and on a national scale, in real and quantifiable ways.
NCWIT is a rapidly growing coalition of more than 300 corporations, academic institutions, government agencies, and non-profit organizations devoted to women's full participation in computing (see http://www.ncwit.org).

The Difference
Many successful programs work to enrich women's experiences with computing. For example, CRA-W offers a host of professional development programs that spark women's interest and skills in research careers. In addition to building women's sense of belonging to a community, mentoring and peer support are hallmarks of programs like ACM-W student chapters, ABI's Grace Hopper Celebration of Women in Computing, the regional Celebrations of Women in Computing, and the NCWIT Award for Aspirations in Computing.

The Pacesetters program is the first of its kind where organizations come together, work across corporate and academic organizational boundaries, and identify effective ways to recruit or retain a specific number of technical women, all within an aggressive timeframe and holding shared accountability to themselves and the public for achieving a common quantifiable goal.

How the Program Works
Pacesetters combine top-down and bottom-up approaches for progress based on both research findings about organizational change and observations of what works for NCWIT members. Each Pacesetters organization must have meaningful participation by executive leaders who work top-down, and change leaders who work bottom-up. Together they build internal teams, develop and fund the needed programs, and share their results.

This program design has several advantages. Executive leaders actively engage and can influence people, policy, and resources within the organization, while providing visible endorsement. Change leaders complement these executive efforts by building out an extended team, including people in a variety of key roles across the organization. Together they develop a broadly shared vision that takes into account group norms and specialized knowledge. This results in a set of organizational approaches for collectively reaching a quantified overall goal of more women added to the technical talent pool.

Pacesetters' approaches include actively recruiting graduate and undergraduate students; retaining them in the major through curricular, pedagogical, and community innovations; developing and raising awareness of midcareer options; and fostering technical innovation by facilitating women's contributions. For the most part, approaches rest on research-informed
promising practices that are tailored to the particular conditions at a Pacesetters organization. Early evaluation shows tangible value in building this type of Pacesetters learning community around a shared and urgent goal (see http://www.ncwit.org/work.pacesetters.html).

NCWIT hosts annual Pacesetters Roundtables that bring executive leaders face to face with team change leaders from each of the 24 participating organizations for focused working sessions. The momentum generated by the roundtables is further spurred through NCWIT's leadership visits with each Pacesetters organizations' executives or deans to discuss their specific approach, leverage NCWIT and other research-based interventions, and encourage an accelerated pace for change.

Organizational Results
Pacesetters use innovative change strategies to reach their goal. Some specific examples include:

- UT Austin developed an "in-reach" strategy to target undeclared freshman women already on campus. They doubled the number of new female students in one year by requesting 40 slots for focused recruiting, targeting students from the First Bytes summer camp, providing faculty and student mentoring for new freshman women, and offering NSF scholarships to selected freshmen women.

- Indiana University used a change model by NCWIT called the Strategic Planning for Retaining Women in Undergraduate Computing Workbook and focused faculty on best practices in pedagogy. They doubled the number of female undergraduate majors in the School of Informatics and Computing, from 75 to 150 in 18 months.

- Virginia Tech decided to connect personally with women residents of on-campus housing. They sent teams of CS faculty, advisors, and students to interact as mentors and peers with female potential and current students. New "designer minors" are offered that combine CS with other disciplines. They reported a 56% increase in the number of female high school students who met with school representatives and showed interest in their programs.

- Intel helped mid-career technical women navigate the company culture and build confidence. They piloted a program called Command Presence Workshop where senior technical women facilitated half-day sessions on successful presenting to decision-making audiences. The workshop gave this specialized training to over 100 mid-level technical women and they continue to measure the impact.
Google helps undergraduate women prepare for the technical work force. They built a new program for college women, brought them to Google's offices and held a career development panel with engineers. The women participated in mock interviews. As a result, the number of applicants grew and Google doubled the number of women software engineering summer interns in 2011 compared to 2010.

These examples from the Pacesetters pilot demonstrate that with focused effort, executive commitment, and by working across organizations, significant results are possible in a short timeframe.

**National Results**

Pacesetters set a goal of recruiting or retaining 1,000 technical women in the U.S. computing work force by 2012 and reported 568 Net New Women in May 2011. Evaluations are continuing to assess progress toward the goal.

As Pacesetters organizations worked toward their goals, a strong need arose for a national platform to publicly share results. Together with NCWIT and brand marketing firm BBMG, Pacesetters helped conceive a national advocacy campaign called Sit With Me. The invitation, "Will You Sit With Me?" gives everybody (men, women, technical, non-technical) the chance to take a small, but symbolic, action to "sit" in solidarity with women in computing, raise visibility for their contributions, and ask others to do the same. A Web site, Facebook page, and Twitter stream encourage action around the theme "Sometimes you have to sit to take a stand." Sit With Me is currently in use by over 300 NCWIT members' organizations. Representatives from 14 Pacesetters organizations are featured in video stories publicly promoting their results (see [http://sitwithme.org/tag/pacesetters/](http://sitwithme.org/tag/pacesetters/)).

**Lessons Learned**

Achieving results requires significant participant effort, and each Pacesetter struggled with parts of the process. Perhaps most of all, time was a challenge. The Pacesetters program work overlays many other professional and personal responsibilities; these are busy people with many demands on their time, and change takes time.

Most Pacesetters agree that the timeline for this pilot was too short (24 months), yet they also reported that the short length led to more urgency and as a result, accelerated the pace of change within their organizations. It took most organizations a year to confirm their goals and strategies, and not all of them did. Every Pacesetter has unique conditions to accommodate, so
practices had to be tailored to fit their specific situation, requiring even more time. Goal achievement was also negatively affected by turnover of key personnel.

Going forward, subsequent cohorts may need to be launched more quickly, or the cohort timeline may need to be extended to allow more time for implementation. It is also clear from this pilot program that additional consulting services are needed for Pacesetters during their strategic planning phases.

Not surprisingly, the academic and corporate Pacesetters progressed toward their goals at different rates due to their dissimilar organizational structures. Many academic Pacesetters had NCWIT Extension Services Consultants who provided guidance and support that enabled them to move quickly to articulate a goal. Some corporations struggled with aligning their organizational and Net New Women goals. Once aligned and focused, however, corporate Pacesetters will see larger numbers of technical women participating, supported by their well-established human resources policies and procedures.

**Benefits**

Data from program evaluation surveys suggests 86% of Pacesetters derive new ideas and fresh perspectives on diversity issues at their organizations as a result of Pacesetters participation. More academic institutions than corporations reported benefits from Pacesetters participation (92% and 78%, respectively). Both agreed that quantifiable goals increased their focus on "the big picture." They thought NCWIT leadership visits served as a catalyst for their efforts and helped legitimize staff time spent on the program.

The annual Pacesetters Roundtable also has a positive impact on participants. One Pacesetter said. "I think the best thing about Pacesetters was the chance to meet and network with other academic institutions particularly who have some of the same concerns about getting women into computing, and to learn about different approaches that people are taking and what kind of success they're having. Overall, I think the meetings were very useful for networking and for information from speakers who touched a nerve and gave us ideas."

Both academic and corporate Pacesetters describe the impact of the program as a stimulus for action within their organizations. In a recent evaluation survey academic Pacesetters wrote, "While we have always been interested in increasing our female population, being a part of Pacesetters keeps this goal at the forefront, and encourages us to make and measure concrete goals." and "Pacesetters' goals, resources, and contacts have provided structure, support, and
accountability, which are helping us define and pursue our goals." Corporate Pacesetters expressed similar views, "Having goals, a strategic focus, key company stakeholders involved, and a strong NCWIT team leading the way and pushing a bit from behind is crucial and leads to action!" Pacesetters said overall the program increased their visibility, awareness, and connections to people both within and across organizations. A Pacesetter commented, "In addition to raising our own awareness, one of the unexpected benefits has been the relationship building with other Pacesetter organizations."

Next Steps

NCWIT's continuing support for Pacesetters' efforts enables an even greater impact as some organizations have already set new goals. For example, Indiana University committed to doubling the number of women in their programs again this year. A new cohort of Pacesetters will be recruited to continue national progress. As successive cohorts of Pacesetters organizations contribute Net New Women to the national talent pool, the representation of women in computing should move toward gender balance. More information about Pacesetters and how your organization can become involved is available at info@ncwit.org.

References


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Figures

Figure. Representatives from 14 Pacesetters organizations are featured in video stories promoting their results as part of the Sit With Me campaign in use by over 300 NCWIT organizations (see

Sidebar: Pacesetters organizations include:

- AT&T
- ATLAS Institute
- Bank of America
- Boehringer Ingelheim
- Cal Poly at San Luis Obispo
- Carnegie Mellon
- Georgia Tech
- Google
- IBM
• Indiana University Bloomington
• Intel
• Microsoft
• Pfizer
• Qualcomm
• Santa Clara University
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