Partnerships
Reflection
Openness
Grants
Resources
Education
Site visits
Successes

These eight elements, identified early on by the ACS Progress Task Force, provide a theoretical foundation for the development of new programs. Each one of the seven Progress Pilot Projects, like molecular structures formed out of a variety of chemical elements, draws on one or more of these thematic elements. For example, the “Thriving in the Workplace” Pilot Project incorporates the elements of partnerships, openness, resources and successes.
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The Society’s “Strategic Plan 2009 and Beyond” lists one of its core values as being a “diverse community of highly-skilled chemistry professionals.”
As we near the end of the first decade of the 21st century, the chemistry community faces a critical demographic issue: Who will be the chemical scientists of the future? What can we do today to ensure that tomorrow’s chemistry community will include bright, innovative, and creative people from all segments of our society?

The demographic data describing our community have evolved dramatically in recent decades and will continue to do so in the coming decades. For example, the percentage of bachelor’s degrees in chemistry earned by women has risen from 30.5% in 1982 to 49.8% in 2007. During the same period, the percentage of Ph.D.s earned by women increased from 16.2% to 36.9%.

Yet, these significant increases in the number of women studying chemistry have not translated into comparable numbers among the leadership of the chemistry community, especially in academe. According to 2008 statistics, just 16% of chemistry professors at the top 50 universities are women. (The breakdown by rank is 12% full professor, 22% associate professor, and 24% assistant professor). While this number represents an increase over the comparable numbers in 2000 (10% all ranks: 6% full, 21% associate, and 18% assistant), it’s clear that we have a long way to go.

If we can understand the issues and barriers affecting women in chemistry—and if we can develop practices and programs that address these barriers—we will all be better able to pursue the Society’s bold mission statement: “To advance the broader chemistry enterprise and its practitioners for the benefit of Earth and its people.”

As the national organization focusing on the health of chemistry and the chemistry community, the American Chemical Society and its leaders have placed this issue near the very top of the Society’s agenda. In the first-ever Board Statement on Diversity (December 2007), the ACS Board of Directors states clearly, “Chemical scientists rely on the American Chemical Society to promote inclusion and diversity in the discipline.”

The Society’s recent emphasis in this area can be traced, in part, to 2000, when ACS President Daryle Busch and the Board of Directors commissioned a Presidential-Board Task Force To Study and Make Recommendations on Issues Concerning Women in the Chemical Professions. The task force, chaired by Frankie Wood-Black, had as its mission “to review the status of women in the chemical profession and to recommend policies and actions through which ACS can facilitate their full participation and advancement.”

In 2001, the task force proposed a portfolio of seven pilot projects, called the ACS PROGRESS plan, designed to help women in the chemical sciences to overcome the early- and mid-career obstacles to their professional advancement. The Board of Directors accepted the proposal and boldly committed a significant portion of the Society’s financial, programmatic, and volunteer resources to its implementation.

The ACS PROGRESS Steering Committee was established in 2002, with a budget of $200,000 and an assignment to test, develop, and evaluate these seven pilot projects. Over the past seven years, we’ve received wonderful assistance from ACS members and staff, as well as significant additional financial support from two key funding organizations, the National Science Foundation and the Camille and Henry Dreyfus Foundation.

Now that we’ve completed nearly all aspects of our assignment, we offer this final report to the chemistry community. As highlighted in the pages that follow, we’ve made good progress and learned some valuable lessons.

This report, however, is just a snapshot in time. The ongoing challenge to enhance the diversity of the chemistry community—and thereby make full use of all our human resources—must remain a top priority for all of us.

Let’s keep moving forward. We invite you to join us.
Lessons Learned

Each of the seven PROGRESS pilot projects used a different approach, all with a common goal of helping women in the chemical sciences to overcome early- and mid-career obstacles to their professional advancement. Judith Benham, steering committee member and chair of the ACS Board of Directors (2007–2009), describes it this way: “What PROGRESS wanted to do—and was largely successful in doing—was raising the visibility of opportunities for women in science through the combined efforts of a number of programs.”

Like a research chemist trying a range of catalysts, solvents, and reaction conditions, the pilot projects used a variety of strategies to reach a range of audiences. As the pilot projects evolved and the results started to come in, a number of common lessons and themes emerged. While these themes are not major surprises to many observers who have been active in this field, the collective results provide a clear picture of the issue of women in chemistry.

Reviewing the entire collection of pilot projects, here are five overarching themes:

**LESSON #1:**
Improving the climate for women in chemistry benefits all chemists, especially in the area of work/life balance.

**LESSON #2:**
For success in chemistry, bonds are important: networking, mentors, and critical mass.

**LESSON #3:**
In providing a positive climate that supports the advancement of women in chemistry, industry is ahead of academe.

**LESSON #4:**
The barrier for women in chemistry is not one of conscious bias. Rather, it is an accrual of incremental disadvantage that builds up through many small, unconscious decisions and policies. Therefore, the solution will not be one grand program but rather a series of small improvements.

**LESSON #5:**
If the barriers for women in chemistry are a problem, it’s even worse for underrepresented minorities in chemistry.
LESSON #1
Improving the climate for women in chemistry benefits all chemists, especially in the area of work/life balance.

The changing demographics of American society, with the increased presence of women in the workforce in the past generation, have affected the way all Americans handle work/life issues. As a result, organizations and their policies are evolving in response to new workforce realities. Valerie Kuck, a PROGRESS consultant who conducted 35 site visits to chemistry departments at major research universities as part of the “Academic Site Visits” project (see page 18), puts it this way: “We can’t continue using the rules of the early 1900s, when we had all male faculties, now in the 21st century.”

In both academe and industry, women are asking for flexibility and support (e.g., childcare, flexible work hours, lengthened tenure clock) so that they can balance the demands of work with the demands of family and personal life. As organizations start to respond, the new climate is turning out to be good for both women and men.

FRANKIE WOOD-BLACK, steering committee member who has worked in industry for ConocoPhillips and Trihydro Corporation, observes, “The workplace is changing. You’re starting to see more work-life balance in companies. And it’s not just improvement for women, but it’s improvement for men, too.”

The generation of chemists just now moving into the workforce has different expectations about the balance between their careers and their lives outside of work. Wood-Black continues, “The Generation Xers are not going to work like the Baby Boomers. You can already see that. It’s not uncommon for someone to stay with a company for five years and then leave.”

In her site visits and discussions with graduate students, Kuck also observed different attitudes in this new generation of scientists. She says, “I heard many times that students were floored at the quality of family life of their professors. When the grad students look at the heavy demands on schedules of pre-tenure faculty, putting in these huge long hours, the students don’t praise them and say, ‘Isn’t it wonderful how dedicated the professors are?’ Instead, what the students are telling me is ‘What a jerk! Do you realize what kind of family life these guys have? They don’t even know their children. I’m shocked to see how little effort they put into their family life.’”

Kuck continues, “For the male grad students who are married, they tell me, ‘My wife would kill me, divorce me, if I put in the hours that my major professor is putting in. I have a child, and I’m going to be there for that child.’”

Benham says, “When you start looking at the various cultural factors on how people prioritize their time and how they prioritize work and family and a host of other things, I think it’s a misnomer to just think of ‘diversity’ as ‘visible diversity.’ I know white men who are disadvantaged in the workforce because they are ‘family-primary,’ and that has nothing to do with visible differences—it has to do with value differences.”

DEBORAH MCCARTHY, steering committee member and associate dean of faculty and professor of chemistry at Saint Mary’s College, points out that the absolute number of men receiving chemistry degrees is declining. (During the 25-year period between 1982 and 2007, the number of males earning bachelor’s degrees in chemistry has declined from 6,861 to 6,472.) McCarthy says, “When we interview male graduate students, they say that family life or life ‘outside the lab’ is important to them. They’re not willing to sacrifice their whole life, and this seems to be a change from 15–20 years ago. In the long run, the faculty retention rate at places which have good practices will be greater than at those places which continue to have practices that say, ‘sacrifice your life or get out.’”

LESSON #2
For success in chemistry, bonds are important: networking, mentors, and critical mass.

Identifying and highlighting “best practices” has been an important goal of ACS PROGRESS. As part of the “Thriving in the Workplace” pilot project (see
page 15), for example, best practices were documented in a series of commissioned magazine articles that appeared in two ACS publications, *Chemistry* and *Today’s Chemist at Work*. A discussion of these best practices, especially networking and mentoring, then served as the foundation for “Roadshows” given at ACS regional meetings.

In the magazine article focusing on networking (“Networking: How Chemists Form New Bonds,” *Chemistry*, Autumn 2003), author Randy Wedin cites a study of 30 women scientists in industry (*Women Scientists in Industry: A Winning Formula for Companies*, Catalyst, 1999). Wedin writes, “Networking is one of five critical strategies for the success of women scientists in industry. … The same study that touts the importance of networks, however, also reveals that women are more likely to be excluded from informal networks.” A number of chemistry-related companies have recently established informal women’s networks, including 3M, Dow Chemical, GE, General Mills, Kodak, Lubrizol, and Merck.

In academe, the success of informal networks and an improved overall climate of a department can depend, in part, upon having a “critical mass” of women faculty members. NANCY TOONEY, steering committee member and recently retired associate dean of engineering and applied sciences at Polytechnic University, says, “Women in departments with fewer women faculty often had different perceptions and levels of satisfaction than did women in departments with more women colleagues. Basically, and perhaps unsurprisingly, the perceptions of tenure-track women about recruitment, retention, collegiality, and the like were affected by or related to the number of female colleagues within the department.”

Interaction among colleagues is becoming increasingly important as scientific research becomes more interdisciplinary and team-based. Yet, as observed by Kuck on her academic site visits, “It was a real disappointment to see how little interaction there was between the female faculty members and the male faculty members. The female faculty members, at many of the schools, were pretty much isolated. They were even isolated from each other.”

It’s not just the women faculty who feel isolated. In her site visits, Kuck met with separate groups of male and female graduate students. Kuck said, “I can’t tell you how many female graduate students thanked me and the ACS for coming and listening to them. Too often, they are really kind of lost out there. They’re isolated, and they get the message that they are not particularly wanted or valued in graduate school.”

In a seminar talk that she gives in conjunction with her site visits, Kuck backs up these general observations with data. A study conducted among chemistry graduate students at 11 top research universities found that women more often expressed dissatisfaction with aspects of their graduate training (70% for women vs. 54% for men). Also, women would more likely attend a support group if one existed (49% for women and 34% for men).

One of the ways that ACS PROGRESS encouraged networking was to hold a reception at regional meetings, in conjunction with the Roadshows. CAROLYN RIBES, steering committee member and a technical leader at Dow Chemical, made presentations at several of the Roadshows. Ribes says, “The most interesting part of the Roadshow was the reception at the end, giving attendees the chance to talk with other women one-on-one. In that informal setting, people could ask specific questions related to their own situation. They found it very helpful.”

As a “best practice,” mentoring is also extremely important. In graduate school, for example, the mentoring support that students receive from their
Lessons Learned

dissertation advisors is a critical part of graduate training. Unfortunately, many women do not receive the same mentoring as men. As compared to the ratings assigned by men, women assigned lower ratings to the support they received from dissertation advisors on many aspects of graduate school—from “working on a project that would have impact” to “overcoming research difficulties” to “help in finding a job.”

Similarly, mentoring support that junior faculty receive from senior faculty can help make or break an academic career. Yet many academic departments fail to have well-defined, formal mentoring programs for junior faculty. McCarthy says, “Mentoring of faculty has been such a key phrase in academia for the last 15 years. I was really surprised [based on the site visit data] that the lack of mentoring of new faculty and graduate students continued at such a level in these research universities.”

Mentoring is not just essential in academia, it’s also essential in government and industry. Summarizing 30 years of research by the Catalyst organization, Sheila Wellington says, “The single most important reason why—among the equally talented—men tend to rise higher [in the corporate world] than women is that most men have mentors and most women do not.”

In a number of companies, leaders are establishing formal mentoring systems. At Lubrizol Corporation, for example, all new employees, at every level within the company, are assigned a “New Hire Buddy” to ease their transition into the organization. The company also offers training workshops on mentoring and has established various networking groups that facilitate mentoring relationships.

LESSON #3:
In providing a positive climate that supports the advancement of women in chemistry, industry is ahead of academe.

One of the biggest problems seen at some—but certainly not all—academic institutions is the mentoring/networking issue discussed above in Lesson #2. Kuck says, “Many faculty women were just totally out there by themselves. They were separate from the other woman, or the other few women, in their department and also separate from the men. That was sad to me coming out of industry, where everyone is working on teams. In industry, the view is that you can’t afford to leave anyone isolated.”
LESSON 4:
The barrier for women in chemistry is not one of conscious bias. Rather, it is an accrual of incremental disadvantage that builds up through many small, unconscious decisions and policies. Therefore, the solution will not be one grand program but rather a series of small improvements.

Psychologist Virginia Valian, in her landmark book *Why So Slow? The Advancement of Women* (M.I.T. Press, 1998), makes the case that "men and women alike have implicit hypotheses about gender differences—gender schemas—that create small sex differences in characteristics, behaviors, perceptions, and evaluations of men and women. Those small imbalances accumulate to advantage men and disadvantage women. The most important consequence of gender schemas for professional life is that men tend to be overrated and women underrated."

Natalie Foster, steering committee member and associate professor of chemistry at Lehigh University, believes that the data emerging from the site visit project will help convince chemists about the validity of Valian’s theory. “As chemists, we’re practitioners of hard science. We want to see the data. There’s a tremendous tendency for people to say, ‘All the numbers and stories about women’s experiences are small. So they can’t really be significant.’”

Foster uses a sailing analogy to make her point. “A one-degree change in course as you leave port doesn’t mean much when you’re sailing out of the harbor. But if you’re aiming for London and all of a sudden you find yourself in the Azores, that one-degree difference in course really mattered. That’s Valian’s idea—that small disenfranchisements, small disadvantages build up over time. With the data from the site visit project, we’re capable now of building a real statistical case for that point of view.”

Kuck lists some of the positive ideas she encountered in her academic site visits that can help level the playing field for women. “Changes must be made to make universities more female-friendly. We need things like better child-care availability, helping trailing spouses get jobs, and making maternity leave more friendly.”

Foster adds, “Think what it means to ‘support’ someone. It doesn’t always have to be financial support to keep people going when they’re at an important point in their career. It can be some relatively little things that haven’t been done before that can make all the difference.”

McCarthy says that the data from the site visit study, when published, will demonstrate the value of these sorts of policies. “Those places that are successful at hiring and keeping women are those places that have true programs that support the women with family-friendly policies. (And I don’t just mean for families with children, but also families that need to give time to a spouse or a parent.) Those places that actually have paid attention to what are thought to be ‘good practices’ have good outcomes.”

PROGRESS projects, such as the “Be Visible” grants (see page 12), were designed to address a number of areas where small differences could start to make a difference. Foster says, “This is such a long-term game we’re playing. If we fund a department to bring in a woman seminar speaker, does that change her life? But if she’s the recipient of the ACS PROGRESS/Dreyfus Lectureship award, does she get a fruitful collaboration, which two years down the road turns into a grant? Who can say what role the initial ‘Be Visible’ grant plays? We can only deal with the immediate metric of getting more women out there giving seminars.”
Lessons Learned

Foster continues, “This is going to be just one of the stones in the arch of someone building her career. As we all know, you take out one of the stones, and the whole arch crumbles. We’re not going to be able to point at one particular incident in a career and say this is the crucial moment. Instead, we’ve hopefully made easier one of the many steps that people have to take.”

LESSON #5:
If the barriers for women in chemistry are a problem, it’s even worse for underrepresented minorities in chemistry.

While the ACS PROGRESS program focuses on women, many of the barriers and solutions will also apply to the issue of underrepresented minorities, where the situation is even more challenging. The percentage of underrepresented minorities (i.e., African Americans, Hispanics, and Native Americans) in the overall U.S. population currently stands at about 26% (2000 census numbers), and it’s projected to rise in coming decades. Yet, just 5.3% of Ph.D. graduates in chemistry in 2006 come from underrepresented minorities.

PROGRESS steering committee members expressed a hope that the lessons learned and the successes achieved by PROGRESS could be expanded to include these other groups. Ribes says, “I would love to see something like this for underrepresented minorities. The situation there is worse, especially in academe. I don’t think it gets as much attention nor has made as much progress as women in chemistry.”

Wood-Black says, “Academe is where things are a lot rougher, where it’s lagging significantly. Trying to find women in academe is one thing, but just try to find a minority.”

Kuck puts the challenge even more bluntly, “The number of U.S. males going into chemistry is constantly declining. The number of women is plateauing. Where in the heck are we going to be building the future of this country? On foreign people who are going to go back to their own homelands to bring their children up in the culture they know and love? We can’t afford the luxury of excluding so many people just because they are the wrong gender or the wrong color of skin. How are we going to compete if we don’t have the people that have the education to get out there and compete?”

Measuring PROGRESS and Looking Ahead

The metrics used to evaluate the short-term success of the pilot projects were necessarily quite focused, including such information as written feedback from surveys and questionnaires (for the “Be Visible,” “GROW,” and “Thriving in the Workplace” projects) and number of site visits conducted and papers published (for the “Academic Site Visits” project). However, the long-term success of the PROGRESS program will best be judged by more general and global metrics, such as the percentage of leadership positions in the chemistry community held by women.

Sally Chapman, principal investigator for the NSF ADVANCE grant (“Academic Site Visits” project) and chair of the chemistry department at Barnard College, points out the challenge of judging the long-term success of these types of projects. “Longer term assessment is so hard, because nobody is doing the control experiment. You can’t really separate out and measure the impact of individual programs.”

When asked to assess the “big picture” of women in chemistry, steering committee members give opinions ranging from cautious optimism at the direction of change to frustration at the pace of change.

Looking primarily at the industrial perspective, Wood-Black says, “Things are actually going pretty well. Right now you see parity in starting salaries. In some cases, starting salaries for women are slightly ahead of men at the bachelor’s level for chemistry and chemical engineering.” However, Wood-Black believes strongly that programs like those developed through ACS PROGRESS effort are essential. “If you don’t keep the pressure on, you’ll just fall back to where you were.”

Foster says, “Granted, things have gotten a lot better, but it’s still not quite the way it’s supposed to be. The PROGRESS project is so important because it has kept the issue on the radar screen. We’re in a phase where there have been some strides forward, and we’re on the upward trail. However, things are still perilous for women. And the corollary to that statement is: If things are perilous for women, they’re really perilous for everyone.”
The eight members of the PROGRESS Steering Committee are all chemists, so it should be no surprise that they’ve approached their task like, ... well ..., like chemists:

- devising experiments (i.e., pilot projects) to test hypotheses
- tackling the question from a number of different angles
- accepting any negative results as helpful feedback
- finding partners and additional funding
- collecting and analyzing data
- revising procedures to respond to initial results
- optimizing conditions
- publishing results
- moving successful pilot projects into the production stage, and, finally
- handing off responsibility and ownership to those best suited to carry the programs forward.

Starting with a menu of seven ideas provided by the PROGRESS Task Force, the steering committee produced a feasibility study of these ideas. Those results were published earlier, in a report titled “Women in the Chemical Professions Study.” Then, the steering committee divided responsibility for the seven ideas among themselves and started setting up the experiments. For most of the projects, the initial results were encouraging, but the procedures needed refinement. Those experiments were repeated, with appropriate adjustments. Fairly quickly, it became apparent that one of the projects (“Corporate Recognition,” see page 16) could not be successful with the available resources, so it was gracefully discontinued.

For some of the projects (“Academic Site Visits” and “Be Visible”), the steering committee produced positive preliminary results and then sought and obtained outside funding to expand the experiments. Ribes said, “By getting significant, matching funding from outside (like the Dreyfus and NSF ADVANCE grants), we really leveraged the ACS commitment in a big way.”

Collecting data for these experiments was quite different from collecting data for chemistry experiments, so the steering committee drew on the experience of ACS staff and outside consultants with the needed expertise (e.g., social scientists to analyze the site visit data). In order to assess the success of each pilot project, the steering committee used a wide range of metrics.

In retrospect, the steering committee believes that the process they used was a good one and could be applied to other issues facing the American Chemical Society. Foster says, “This is a pretty good model for how to develop programs.”

With this final report, the steering committee has finished its assignment and put itself out of business. Ribes says, “We were given the challenge and opportunity to pilot seven projects by putting very dedicated resources to work on specific projects. The idea was that the successful projects would be adopted by other functions within the ACS. With a record of six out of seven, we have a pretty high batting average for getting things out of PROGRESS and into the ACS.”
**BE VISIBLE:**

**Funding Speaker Opportunities**

**Purpose:**

To improve the visibility of women in academe and to encourage universities to become aware of outstanding women chemical scientists.

**Target audience:**

Chemistry departments at research universities and “rising star” women. (The PROGRESS definition of a “rising star” is a woman scientist or engineer whose work is considered highly significant and who obtained a Ph.D. in the previous 5–10 years. Those “rising stars” from academe must be tenure-track assistant or associate professors.)

**Type of activity/support:**

There are two types of “Be Visible” awards:

- “Be Visible I” provides up to $1,000 per year to up to 12 Carnegie Research Extensive institutions to support invited speakers who are “rising star” women chemists and chemical engineers in academe, industry, or government.

- “Be Visible II” provides a maximum of 12 “rising star” faculty women (per year) with up to $1,000 to present seminars at other institutions. The award is titled the ACS PROGRESS/Dreyfus Lectureship.

**Ongoing responsibility for program:**

- “Be Visible I” was transferred to the Women Chemists Committee (Development Subcommittee) in 2006, and awards are now offered as WCC Lectureships.

- “Be Visible II” was transferred to the Women Chemists Committee (Development Subcommittee) in 2009.

**Partners:**

“Be Visible II” is funded by a $54,000 grant from the Camille and Henry Dreyfus Foundation. This grant covers 80% of the costs.
Outcome of “Be Visible I”:

<table>
<thead>
<tr>
<th>Year</th>
<th># Universities Invited</th>
<th># Universities Applied</th>
<th>Awards Presented</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>65</td>
<td>17</td>
<td>10 @ $1,500 each</td>
</tr>
<tr>
<td>2003</td>
<td>66</td>
<td>16</td>
<td>12 @ $1,000 each</td>
</tr>
<tr>
<td>2004*</td>
<td>53</td>
<td>9</td>
<td>6 @ $1,000 each</td>
</tr>
<tr>
<td>2005</td>
<td>108</td>
<td>20</td>
<td>12 @ $1,000 each</td>
</tr>
</tbody>
</table>

* A new solicitation date was set, which decreased the number of applicants.

Outcome of “Be Visible II”:

<table>
<thead>
<tr>
<th>Year</th>
<th># Applicants</th>
<th># Awards</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004/2005</td>
<td>11</td>
<td>8</td>
</tr>
<tr>
<td>2006/2007</td>
<td>90</td>
<td>25</td>
</tr>
</tbody>
</table>

Comments from grant recipients and steering committee members:

Based on a survey of universities participating in “Be Visible I,” all seminars were judged to be excellent or very good. 40% of the departments would not have invited the speaker if these funds were not available.

“The rising stars” were uniformly highly lauded for the seminars they gave. Most of them not only gave a chemistry seminar, but they interacted with grad students to talk about issues such as getting started in academe and how to blend your academic life with your personal life.”

Natalie Foster

“In the long run, I think “Be Visible II” will have the greater impact. Any time that you’re able to give someone an opportunity to promote their career by being invited to speak at other institutions, it’s a success. The women said that without this funding it would have been much more difficult, because many of them have families and have to pay for babysitting, as well as travel and other expenses.”

Deborah McCarthy

I met with a group of female graduate students and post-docs on my trip, at my request. The students had great concerns about balancing career and family. There is currently only one woman on faculty at [the institution visited], so they do not have role models. I think the meeting went very well, and I hope they feel more optimistic about the future of female scientists after my visit.

Comment from “Be Visible II” recipient

“This is an excellent program, which I would like to see expanded.”

Comment from a senior scientist regarding “Be Visible I”
Web-Based Resource Center

Purpose:
To help early- and mid-career women nurture and advance their careers by providing online tools for self-assessment and links to relevant sister societies and women’s organizations.

Target audience:
Primarily early- and mid-career women chemists. Secondarily, all women chemists.

Type of activity/support:
Development of a website that provided access to self-assessment tools, reference materials related to career development for women, and information on programs available through ACS and other organizations.

Outcome:
Measured by number of hits to the website, as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th># Homepage Visits</th>
<th># &quot;Portrait of a Woman Scientist&quot; page Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 2002–January 2003</td>
<td>252</td>
<td>N/A</td>
</tr>
<tr>
<td>January 2004</td>
<td>171</td>
<td>N/A</td>
</tr>
<tr>
<td>February 2004</td>
<td>269</td>
<td>184</td>
</tr>
<tr>
<td>March 2004</td>
<td>107</td>
<td>118</td>
</tr>
<tr>
<td>January 2005</td>
<td>139</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Ongoing responsibility for program:
The administration of the Web-based Resource Center is now overseen by the Women Chemists Committee (Communications Subcommittee). The entire ACS website underwent extensive changes throughout 2007 as a result of the “ACS Web Presence” project, and the content of the WCC website will continue to evolve in coming months.

Comments from steering committee members and consultants:
“I think we were a few years too early to develop a really effective web presence. Also, the nature of the ACS website at the time was not very conducive to attracting readers to the PROGRESS web resources site. The numbers of visits to the site were low by many standards. Given that we have a new ACS web presence [launched in September 2007], it might be useful to revisit this initiative.”
Nancy Tooney

“In conjunction with the NSF ADVANCE grant [see “Academic Site Visits” project], we proposed to make a website. However, we found that many of the NSF ADVANCE schools already have very thorough and excellent websites and online resources [see http://www.nsf.gov/crssprgm/advance].”
Sally Chapman
Thriving in the Workplace
An Awareness Program

Purpose:
To communicate to all chemists what challenges early- and mid-career women chemists and chemical engineers face and to identify best practices to help them thrive in the workplace, thereby fostering diversification of the workforce.

Target audience:
Women chemical professionals, their colleagues, and their employers.

Type of activity/support:
Published magazine articles discussing best practices.
Half-day symposia ("Roadshows") presented at ACS regional meetings.

Outcome:
"Thriving in the Workplace Roadshows" were conducted at eight meetings, including the following:
- 2003 (Southeast regional meeting)
- 2004 (Central, Southwest, Western, and Southeast regional meetings)
- 2005 (Northeast, Midwest, and Joint Southeast/Southwest regional meetings)
- 2005 (Pacificchem Conference)

Attendance at each Roadshow was approximately 35 attendees from academe, industry, and government. Each half-day symposium typically featured two presentations (based on slides prepared by the PROGRESS team), a panel discussion, and a networking reception.

Three commissioned magazine articles were published:
- “The Meaning of Mentoring” (Today’s Chemist at Work, March 2003)
- “Creating the Right Chemistry for Women in Industry” (Today’s Chemist at Work, September 2003)

Comments from Roadshow attendees and steering committee members:

Based on a questionnaire completed by attendees,
- 80% would recommend the Thriving in the Workplace Roadshow to a colleague.
- 50% would attend another Thriving in the Workplace Roadshow.

"When we transferred the Roadshow project to WCC, they really appreciated that they had a full package that had already been tested. Now, when they get contacted by the regional meeting coordinators, they’re able to say, ‘We have a package. You’ll need to provide an organizer that does this, this, and this, but things are pretty well laid out.’ The Roadshows are still happening at regional meetings. In fact, some of the regional meetings have gone toward more of a diversity program, which I think is great, because many of the issues are the same.”
Carolyn Ribes

Ongoing responsibility for program:
The Roadshow program was transferred to the Women Chemists Committee (Local and Regional Outreach Subcommittee) in 2006.
Corporate Recognition

Purpose:
To promote a culture change within the industrial sector by publicly recognizing companies that have successfully diversified their senior management staff and/or have implemented “best practices” (i.e., progressive ideas) designed to identify and promote women to these positions.

Target audience:
Chemistry-related industries, both management and scientists.

Type of activity/support:
Recognition program (e.g., annual awards to companies from ACS for “Outstanding Advancement of Women in Chemistry,” etc.).

Partners:
Initial discussions were held with the Catalyst organization (a non-profit research organization founded in 1962 to advance women in the corporate workplace), with attendees at the Women in Industry Breakfast at an ACS national meeting, and with ACS Corporation Associates.

Outcome:
After these focus groups and discussions, it was determined that this project was not feasible for the ACS, particularly because of the high cost of a meaningful program. Further development of the program was discontinued in March, 2004.

Comments from steering committee members:

“I’m glad we realized that we couldn’t do what needed to be done, and we backed away from that one. Congratulations to us for recognizing that and not trying to pull off something half-baked.”
Natalie Foster

“After talking with women in industry and talking with the prime organization for corporate recognition on a broad scale, namely Catalyst, we were not able to interest them in working together in the specific area of recognition of excellence in the chemical industry. From our own perspective, it was difficult to determine exactly what kind of company would be included; whether the whole corporation or a particular site would be recognized; how to determine the kind of award that would help women in a company to benefit; and how to financially support an ongoing initiative.”
Nancy Tooney
GROW: Grants for Renewal Opportunities

Purpose:
To provide educational grants that enable women with limited or no access to training dollars to enhance their professional development in their current jobs or to facilitate their progress to positions where business skills and awareness are an advantage.

Target audience:
Originally targeted at women chemists in industry and government. Later expanded to include women chemists in academe.

Type of activity/support:
Grant of up to $2,000 per recipient to reimburse costs for one training course, travel, and childcare.

A survey of GROW grant recipients found that:
- 90% rated the training courses as excellent.
- 100% indicated the training session provided knowledge needed in their field.
- 100% indicated they would not have attended the training course had they not received the grant.

Comments from grant recipients and steering committee members:
“..."I am much more knowledgeable about equipment. I better communicate with the calibration technician and engineer."
GROW grant recipient and attendee at "Understanding Industrial Processes, Measurement & Control"

“...When we conceived the GROW grant idea, we were responding to pretty universal anecdotal information about how people respond to new job opportunities. Women tend to feel that before they will take a job, they really have to have their skill set in place. Their male counterparts, on the other hand, will tend to just jump in feet first and get on-the-job training. In their grant applications, the women wrote that ‘I don’t feel I can go ask my boss to send me to this program, but I believe I need this program to take care of a perceived gap in my background.’"
Frankie Wood-Black

Outcome:
<table>
<thead>
<tr>
<th>Year</th>
<th># Applicants</th>
<th># Recipients and Award Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>45</td>
<td>12 (up to $2,000 each)</td>
</tr>
<tr>
<td>2004</td>
<td>35</td>
<td>19 (up to $2,000 each)</td>
</tr>
<tr>
<td>2005</td>
<td>7</td>
<td>7 (up to $2,000 each)</td>
</tr>
</tbody>
</table>
Academic Site Visits

Purpose:
To collect data on “best practices” in chemistry and chemical engineering departments that have established favorable environments for their women faculty and students. To disseminate this information widely to assist departments who wish to support the careers of women faculty.

Target audience:
Faculty, graduate students, department chairs, and university administrators.

Type of activity/support:
Site visits to academic institutions to collect meaningful data on the development of environments conducive to the professional training, hiring, and advancement of women on the faculties of chemistry and chemical engineering departments. Publication of findings and conclusions through papers in peer-reviewed journals and through news media in the science community.

Partners:
This project is funded, in large part, by a $300,000 ADVANCE Leadership Grant from the National Science Foundation. (See http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5383 for more details on the NSF ADVANCE program and this particular grant.)

Outcome:
- Conducted 35 site visits to research universities (2002–2005).
- Analyzed data (from both surveys and focus groups) (2003-2007).

Ongoing responsibility for program:
This is a one-time research program and will not be transferred to another function within ACS.
Comments from consultants and steering committee members:

“We’ve got a lot of interesting data. I don’t think we’ve discovered things that nobody has ever seen before anywhere else. Quite the contrary, we are seeing that, if you read the social science literature and look at studies of what kinds of things influence people in making decisions, our results are consistent with what has been seen in other fields and other studies. But where our results have the potential of having a greater impact is that we can say to the chemistry community, ‘These are not somebody else’s data about somebody else’s discipline. These are recent data at top chemistry departments. This is the way things are today in chemistry departments, and you’ve got to pay attention.’”

Sally Chapman

“We had hoped to set up a process for recognizing departments with best practices, in terms of the advancement of tenure-track women faculty. However, we soon realized that we would have to maintain confidentiality and not identify the schools visited to ensure that people would be willing to respond. We are in the process of preparing papers for publication on our findings.”

Nancy Tooney

“One can’t deny the impact that Val Kuck had with those visits. One-on-one, I think that Val made a tremendous impact just in letting people know that this issue matters and that people care about this. She really awakened an awareness within individual departments.”

Natalie Foster
Purpose:
To facilitate the development of critical, non-technical skills among women chemists.

Target audience:
Women employees in the chemical enterprise.

Type of activity:
An online educational course of business and leadership skills.

Ongoing responsibility for program:
This course was developed in conjunction with the ACS Continuing Education Department and has been completely under its administration since February 2006. In addition, some elements of this course have been incorporated into the new ACS Leadership Institute.

Comments from attendees and Steering Committee Members:
Based on feedback from a survey of participants, 90% said they would recommend the course to others. Comments received from the participants included the following:
- “I liked it all and it was all very relevant.”
- “Workbook assignments were excellent.”
- “I enjoyed the discussions about honesty and integrity. They really drove home the importance of trust in a relationship.”

Benham says, “There’s a framework for leadership that can be taught, but it’s difficult to teach it all in one course. In the course I taught, people told me they thought it should be split into two courses or make the course twice as long. I think that, given the difficulty that people have in making long-term time commitments, the idea of breaking it into smaller courses that are more focused is the direction the program needs to go.”

Judith Benham
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