

SURVIVAL SKILLS FOR SUCCESSFUL WOMEN SCIENTISTS AND ENGINEERS – A SERIES OF CAREER DEVELOPMENT WORKSHOPS

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Abstract — *Success in science and engineering professions involves more than a technical degree. Women traditionally lack access to informal mentoring and networking needed to learn the rules of the game for career advancement. To fill the gap and provide advice and training in navigating through the waters of today's research world to success, Argonne National Laboratory initiated a workshop series designed to assist women scientists and engineers in developing skills for career advancement. The series, entitled "Survival Skills for Successful Women Scientists and Engineers," consisted of six workshops covering such issues as establishing a professional identity, leadership, effective communication, conflict management, proposal writing, overcoming hidden barriers and more. Participants have expressed high satisfaction with the workshop series. A summary of each workshop, the results of participant evaluations and advice on how to organize a similar program tailored to your organization are provided.*

Index Terms — Career Advancement, Networking, Retention, Training,

INTRODUCTION

The challenge to address the underrepresentation of women in science and engineering continues to be a key focus of women's programs in academia, industry and government. Reaching this WEPAN Symposium's theme goal of 50/50 by 2020 requires not only attracting more young women to these professions, but also retaining and advancing them.

Achieving professional success in science and engineering depends not only on technical ability but also on the ability to learn and apply the rules for career advancement. These rules can be specific to a given organization and are often passed on through informal networking and mentoring within the organization. In a male-dominated organization, such as many R&D organizations focused on physical science and engineering, networks form more naturally among male colleagues and

women often lack access to these informal networks. Furthermore, male role models for scientists and engineers are abundant at every level in the organization whereas female scientists and engineers are scarce, especially in positions of leadership at the Laboratory. Without appropriate role models, mentors and networks, women have difficulty acquiring the skills and information essential to advancement.

Though these small disadvantages for women may not seem significant, in her book, "Why So Slow? The Advancement of Women," sociologist Virginia Valian describes the "accumulation of advantage" as the long-term consequence of such small differences in treatment of men and women. Like interest on capital, small differences build over time and create significant inequity between men and women. [1] Eventually these factors can contribute to the lower retention and advancement of women.

To level the playing field, the Argonne Women in Science and Technology (WIST) program, in cooperation with the Division of Educational Programs (DEP) and the Human Resources (HR) department, initiated a program of training for success. They launched a new monthly workshop series designed to equip women in scientific and engineering positions with needed skills for career advancement. The series, entitled *Survival Skills for Successful Women Scientists and Engineers*, covered a variety of career-related issues such as effective communication, overcoming hidden barriers, and leadership in the workplace. A different workshop was presented each month for a total of six sessions.

OVERVIEW OF SERIES

To organize the series, a committee of women from WIST, DEP and HR was formed. These women brought together essential perspectives and resources, including personal experiences as women scientists and engineers, educational and training skills, and human resources management experience. The first implementation of the series was

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² The submitted manuscript has been created by The University of Chicago as Operator of Argonne National Laboratory ("Argonne") under Contract No. W-31-109-Eng-38 with the U.S. Department of Energy. The U.S. Government retains for itself, and others acting on its behalf, a paid-up nonexclusive, irrevocable worldwide license in said article to reproduce, prepare derivative works, distribute copies to the public, and perform publicly and display publicly, by or on behalf of the Government.

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considered a pilot program from which future training would be identified and created. The objective of the series was to provide career advice and training in developing skills for advancement. Early career women scientists and engineers were the target audience.

The series was publicized through a memo from Argonne's Deputy Laboratory Director and the Director of Human Resources to Division Directors and Department Heads as well as through articles in the internal employee newsletter, the Argonne News. To define the scope of the workshops and to attract attendees to the series, the first session was open to all employees with no registration or fee required. During the first session, participants were asked to brainstorm ideas for workshop topics most needed/desired. Subsequent sessions were tailored to the expressed interests and needs of participants. Registration was required for the remaining five sessions and a nominal fee (\$100) was charged to the division of each participant. The fee covered costs associated with outside speakers and workshop materials, but it also served to legitimize the workshops for both the participants and their managers. Participants showed initiative in asking for division support, and they had a higher personal commitment to attend as many sessions as possible because divisions had paid for the program. Laboratory divisions committed to support the program, allowing the participants to attend the two-hour sessions stretched over six months.

Argonne comprises two physical sites – one in Illinois and one in Idaho. For this pilot series it was decided to hold the workshops at the Illinois site and establish a video link to the Idaho site. Ultimately, two of the workshops were conducted at both the Illinois and the Idaho sites.

Workshop presenters were a mix of training professionals and successful women scientists and engineers including Argonne staff members and outside speakers. By utilizing internal speakers, participants were able to meet and interact with female role models within the Laboratory.

Attendance was not limited to the early-career target group and Argonne staff at all levels were represented. It should be noted that men were not excluded and some attended the first session. The final list of registered participants included 41 women. The make-up of the group is shown in Figure 1. The bulk of the R&D participants (75%) were in early career (5 years or less experience in the workforce).

Workshops were two hours each and held approximately monthly from July 2002 through February 2003. Time was devoted during each workshop for discussion and problem solving/role playing. Descriptions of the individual sessions are given below.

WORKSHOP DESCRIPTIONS

Dr. Beverly Hartline, Argonne's Deputy Laboratory Director, launched the series and presented the July 2002

workshop on “**Advancing Professionally to Achieve Your Ambitions.**” During the workshop, participants were asked to consider questions such as “What are your ambitions? What does a successful technical career look like? What kinds of choices lead to success? What are the most important factors that facilitate success in science/engineering? How can you overcome or avoid barriers? How can you find (or make) a great mentor?”

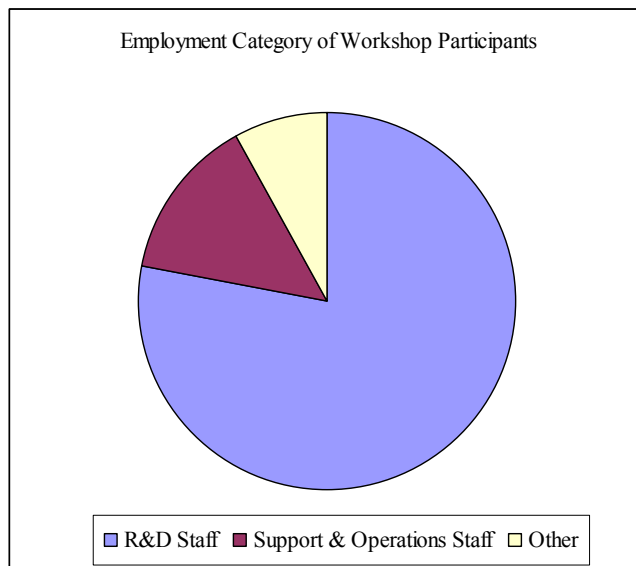


FIGURE 1:
PARTICIPANTS' JOB CATEGORIES

Dr. Hartline shared insights and facilitated discussion to lay the foundation for subsequent workshops. An important message was to decide for oneself what defines success *for you* and set goals with that definition in mind. Dr. Hartline identified three dimensions of success for participants to consider: 1) Recognition such as advancement, peer respect, publications, citations, job offering, speaking invitations; 2) Impact of one's work on society such as improvement to world, country, society, science, engineering; and 3) Individual/self fulfillment such as independence, life balance, ability to do what you are passionate about.

At the conclusion of the session, participants were asked to list topics of interest for future sessions. Participants rated the session as highly valuable. There were lively discussions on the complexities and multiple dimensions of success. Participants found meeting and sharing ideas with peers and co-workers from other parts of the Laboratory to be particularly valuable.

For the August 2002 session Dr. Marion Thurnauer, then-Director of Argonne's Chemistry Division, presented **Establishing Your Professional Identity**. Dr. Thurnauer discussed how to establish a professional identity in a science and engineering setting like Argonne. "The skill set for a successful career in science and engineering parallel

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many of those requisite for a successful career beyond the bench," she commented.

Dr. Thurnauer used a personal perspective to describe how these factors contribute to attaining one's career goals. Strategies for establishing a successful career and dealing with today's changing environment were presented. One idea that generated much discussion concerned the importance of seeking out opportunities for visibility both internal and external to the organization. Volunteering for internal Laboratory committees and participating in professional societies can increase visibility and recognition and impact advancement. Participants expressed that group discussions and "suggestions for increasing visibility were especially rich and useful."

Ms. GERALYN BECKER, a professional trainer and Manager of Argonne's HR/Performance Development Group, gave the presentation entitled **Identifying your Personal Leadership Style and Applying It in the Workplace** for the September 2002 session. Using the Myers-Briggs Type Inventory (MBTI®). [2] Ms. Becker helped the participants identify their personal leadership styles, personality traits, methods for filtering information, making judgments, planning and problem solving. Emphasis was placed on how to use the knowledge in our daily work environment to enhance individual and group effectiveness and visibility. Participants were able to compare their styles to the prevalent work and leadership styles at Argonne, and use the information to traverse the Laboratory environment more effectively.

One measure of success in the workplace is the ability to achieve desired results through positive interaction and the willing cooperation of others. Ms. Mary Kay SLOWIKOWSKI, a professional speaker/trainer with Slowikowski & Associates, taught participants how to communicate with coworkers and foster optimum teamwork in the October 2002 session entitled **Communication, Coping Skills, and Conflict Management**. Ms. Slowikowski provided techniques for building self esteem, enhancing communication and coping skills, and identifying and using the best tactics to resolve conflicts in the work environment. After identifying their personal communication style, role play exercises were used to allow participants to practice communicating in different styles. By recognizing and using different styles we can interact more effectively with coworkers and successfully manage conflict.

Knowing more about the politics, strategies and opportunities for acquiring and securing funding can help one to anticipate and adjust to changes in today's unstable funding environment. This is a crucial survival skill for women scientists and engineers in any R&D organization. The December 2002 session featured a panel of experts knowledgeable about proposal writing, funding and procedures at the Laboratory. Dr. Christopher Reilly, Director of Argonne's Environmental Research Division, Dr. Carol Giometti, Senior Biochemist & Group Leader in

Argonne's Biosciences Division, and Ms. Connie Marciewicz, Assistant Chief Financial Officer for Budget Management at Argonne, shared their knowledge and experiences in the session - **Where the Money Is and How to Get It**. Discussions focused on how to obtain funding from a variety of internal and external sources. Topics included how to write and submit fundable proposals, how to navigate the Laboratory management chain, and how to gain visibility. Finally, information was provided on how overheads are applied to research funds, and how money moves through the Laboratory system. A key concept shared in this session was how to use internal funding to obtain preliminary data to support proposals for external funding. As stated by a participant, the session was "concise, straightforward, practical ...and very informative".

In the real world, a successful woman must be cognizant of the unspoken rules, and identify and develop tactics for conquering hidden barriers. Ms. Gwendolyn Morrison, a mechanical engineer and Director of Argonne's Plant Facilities and Services Division, led the February 2003 session entitled **Strategies for Overcoming Hidden Barriers**. The session provided insightful information and practical techniques for conquering hidden barriers. Sometimes hidden barriers are within – often women shy away from the limelight and retreat from the front. Ms. Morrison emphasized that it's okay to be out in front. It's about jumping the hurdles...gracefully! She further emphasized that it is important to obtain coaching from others and advised participants not to rely solely on their boss for career advancement. Another tactic Ms. Morrison shared how, when confronted with inappropriate remarks or situations, to ask questions and paraphrase statements to clarify the issue and give people the opportunity to re-think their statements. Ms. Morrison also counseled participants to be true to themselves. Understanding one's own goals helps clarify what is negotiable and what is non-negotiable. "It's hard to navigate without a compass," she commented. "We all need to find and effectively use our compass."

EVALUATING THE SERIES

At the conclusion of each workshop session, evaluations were completed by participants. These assessments were used to improve the subsequent sessions. Adjustments were made to room layout, video link, etc. One important idea implemented from these evaluations was the establishment of an email list for facilitating communication among the participants and for continuing discussions following the workshops.

After the full series had been completed, a final comprehensive evaluation was circulated as well. Table 1 shows highlighted results from the evaluations. Participants were asked to rate the degree to which they agreed with a given statement, 5 as strongly agree, 1 as strongly disagree. The scores in Table 1 represent the average of the responses.

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Of the 41 participants, 18 (44%) returned the survey. A review of the series and the results were shared at an open meeting following the workshops as well. This provided for input/feedback from others who did not attend.

LESSONS LEARNED

Overall each workshop and the series as a whole were rated highly by the participants. The evaluations also support the fact that the workshop provided tangible skills that participants have already put into practice. The most improved skills were confidence, conflict management, the ability to set goals, and leadership.

TABLE 1:
RESULTS OF FINAL EVALUATION

Question (5 – strongly agree, 1 – strongly disagree)	Avg Score
Overall, the workshop series was excellent.	4.11
The series fulfilled my expectations. ³	3.94
The series provided practical skills that I can use on the job.	4.0
I have already used one or more skills from the series.	3.71
The workshops improved my:	
Leadership skills	3.53
Conflict management skills	3.71
Confidence	3.88
Ability to set goals	3.65
I would recommend this workshop series to others.	4.33
Attending the series has positively impacted my ability to advance at ANL.	2.67
I would attend another workshop series building on this one	4.06
The series provided an opportunity to network with other women	4.61

It is interesting to examine together the questions on recommendation of workshop to others and the impact the training had on ability to advance. It appears the participants loved the workshop and would recommend it to their colleagues, but they were unsure if the training and experiences had positively affected their ability to advance. In comments, many noted significant barriers that are out of their control. However, it may just be too soon to tell. The

³ This score is misleading, as several participants noted that they had low expectations, which the series surpassed.

organizers plan to track these participants and send follow up questionnaires in 6-12 months to assess impact on participants' career development.

Examining the feedback, it is clear that the primary immediate benefit to participants was the opportunity to network and interact with both female peers and outstanding women scientists and engineers at the Laboratory. The dialog portion of the workshops was identified as the most valuable part of each session. The Q&A sessions were highly rated. This was a primary goal of the workshops. Ideas to build on this aspect include providing a forum for networking with men as well.

Because Argonne is spread across two distant sites, the opportunities for women at the Illinois and Idaho sites to interact are limited or non-existent. The workshops offered a unique chance for such interaction. Although there were significant audio-visual technical difficulties, particularly in the first few workshops, many still felt the sessions and interaction were valuable. It is important to strengthen this connection in the future.

The evaluations included open-ended questions for improving the workshops and suggestions for future topics. To improve the execution and effectiveness of the workshop, advance preparation such as hand-outs/reading assignments would be useful. In addition, more follow up discussions and summaries would be useful. The email list serve was basically underutilized. During the open forum discussion of the series, it was suggested that a different participant be assigned to moderate the list serve following each workshop. The moderator would pose questions related to the topic and generally stimulate further discussion.

WHAT'S NEXT? FUTURE WORKSHOPS

The *Survival Skills for Successful Women Scientists and Engineers* workshop series was clearly a success in many respects. The next challenge will be to build on that success and implement additional workshops/training programs to continue the career development of the participants and to address needs and concerns identified through the series. Recommendations for future activities have been determined.

First, now that the pilot series has been created, a repeat series of the identical topics can be conducted to reach additional women in science and engineering positions. Feedback from those who did not participate in the pilot series indicated that the initial uncertainty in scope impacted their decision. But knowing the topics would attract them to participate in a second run of the workshop series.

In addition, a follow-on series with more emphasis on mid-career and advanced-career issues will be explored. Suggested topics/speakers for future workshops include:

- Work/family balance
- Negotiating skills
- Speakers from professional societies

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A key suggestion was for a full day or weekend retreat to bring science/engineering women from Argonne Idaho and Illinois together and kick-off another workshop series. The effectiveness of the workshops depended greatly on the open sharing of the participants. The retreat would provide the opportunity to get to know each other better and to build trust among participants, thus enhancing the experience and learning in subsequent workshops.

Finally, in light of the goal to create opportunities for women scientists and engineers to network, a workshop series expressly designed to bring men and women together would connect the women to the traditionally all-male networks. Workshops on diversity issues, understanding changing demographics in the workplace and early career development issues can promote interaction among men and women and diverse ethnic groups.

For more information on the Argonne workshop series, visit www.wist.anl.gov and click on Activities.

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