

Advancing Career Success: Professional Development Initiatives That Work for Women in Science and Engineering

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ABSTRACT

The key aspect of reaching critical mass in the workplace is the advancement of professional women into senior and leadership positions. Some initiatives to support the career development of professional women put positive programs in place but do not engage the women themselves. The initiatives reported in this paper work because they implement the principle that women are responsible for their own careers. Women gain the confidence to take charge and the tools to achieve positive results. The initiatives also show potential mentors, such as managers and academic leaders, how to support the women in their career objectives. The Chair for Women in Science and Engineering, Atlantic Region (CWSE) and WISE (Women in Science and Engineering) Newfoundland and Labrador have combined expertise and resources to produce a handbook and a series of workshops to support the career development of women in science and engineering. This paper describes the principal features of the handbook and the workshops. It also presents the evaluations received to date and indicates where further development is planned.

Keywords: career success, professional development, workshops, handbook

INTRODUCTION

This paper describes a handbook and a series of workshops to support the career development of women in science and engineering. The handbook, in the engineering tradition, is a concise, convenient reference on a range of topics that are significant in the workplace. The Chair for Women in Science and Engineering and WISE Newfoundland and Labrador have also developed workshops to deliver information from specific sections of the handbook in small group, one-day and half-day formats.

About 100 women have participated in the career and media workshops as of April 2002, in a variety of settings and locations. In addition, over 50 managers have participated in an evolving version of the managers' workshop. CWSE and WISE will continue to refine workshop format and add content until the major topics are ready for 'off-the-shelf' delivery. The handbook, slated for publication in summer 2002, will be also be revised and updated as required. Samples of both the workshop and the handbook are presented at the ICWES12 conference.

The NSERC/Petro-Canada Chair for Women in Science and Engineering is a senior faculty position at Memorial University with a mandate to support the increased participation of women at all levels in science and engineering. CWSE pursues research and undertakes promotion projects. WISE Newfoundland

and Labrador is a community organization which encourages young women to consider the broad range of science and engineering careers available to them and which supports women working in these fields. CWSE and WISE have joined forces on several successful projects; the handbook and workshops are the latest in the series.

This paper explains the rationale and strategy of the handbook and workshops, gives the background on some of the content, and reports the results to date.

RATIONALE

The percentage of senior managers and executives who are women remains small, especially in science and technology organizations. Higher proportions of women than men leave science and engineering careers for other career options (1,2). As long as the retention rates in any particular group are lower for women, their participation rate will not increase (3). The critical feedback to this process is that retention rates are likely to be lower where participation rates are low. This project aims to break the feedback cycle by increasing the retention and success rates of the women who do enter a particular professional stage.

Our rationale is that in career development, both the choice and the responsibility rest with the individual. She decides on the career path, the cost-benefit and work-life balances, and the personal style with which she is comfortable. Supporting her includes helping her to identify a range of options, raising her awareness of both external and internal factors, and giving her confidence and motivation to advance.

A possible concern about a project which engages the women rather than the employer is that it undertakes to adjust the women to the workplace, instead of to improve the work environment for the women. This concern is answered with the following considerations. First, workplaces, even those with good leadership, are slow to improve, because the change must be implemented in every personal interaction which involves the women. Second, the aim is not to fit the women to the workplace, but to give them the tools to effect change, particularly in the interactions which involve them. Third, the information is provided not only for women in the workplace, but also in print and workshop format for those interested in their progress, and in this way the employer is made part of the process.

NOT SKILLS DEVELOPMENT

Career development training covers a range of objectives, often expressed by training professionals as: Information -> Skills development -> Behaviour modification. The training format should be appropriate to the objective: information can be delivered; skills must be practised; behaviour change requires ongoing coaching and reinforcement. The handbook and the Developing Leaders Workshops fall within the range, but at a new coordinate on the axis.

Career skills training is not the mandate of either CWSE or WISE. Furthermore, the skills identified in the handbook/workshops are generic, and many organizations provide training in them. Finally, the handbook/workshops audience is professional women, familiar with either self-directed learning or selecting an appropriate training program.

The objective of the handbook/workshops is to bring women to the decision point of planning their own careers. On the training axis, if {Information, Skills development, Behaviour modification} are {1,3,5}, then the decision point is about 2. It requires information, awareness, affirmation, and confidence. The objective is achieved, in part, by recognizing both the aspirations and the doubts that women carry about their careers, and providing reassurance that both can be managed.

HANDBOOK DESIGN

Becoming Leaders: a Handbook for Women in Science and Engineering and Their Mentors has information that is accessible and practical. The handbook is intended for busy people, whose interest is primarily their careers or the development of the human resources in their organization. Hence much of the information is given in point form. Supporting each point is substantial social/education/psychology research, and references and a bibliography are given for those interested in that information.

While the objective of the handbook/workshops seems abstract, information on concrete skills provides a vehicle to achieve it. The list of handbook topics grew from issues identified by women as priorities, frequently asked questions by interested managers, and insights by women leaders. As with any handbook, the relevance of a particular section depends on the interests of the reader. Separate sections are addressed specifically to students, professionals, and academics, and to managers interested in their progress. There are sections for

high value opportunities, such as a media interview, FAQs about women in science and engineering, and of course, a section for community groups such as WISE. The Table of Contents is included as an Appendix to this paper.

WORKSHOP DESIGN

The *CWSE/WISE Developing Leaders Workshops*, like the handbook, are designed for busy people. Hence they are compact - three to six hours in length. While new skills are introduced, this format does not allow time to extensively practise them; skill development is not the primary workshop objective. Information is presented interactively, in a manner that encourages participants to relate it to their own experience. Reinforcement occurs when participants recognize common experiences which, since they are in a minority in the workplace, they often have not realized were common and characteristic for women. The workshop illuminates necessary skills, showing how they can be mastered. Decision points of greater or lesser significance are attained as participants recognize things they can achieve, and gain the confidence to take positive action. The primary audience for these events is women early in their professional careers in science, engineering and technology, and senior students in these fields.

Workshops have additional benefits, such as group support, not available in print format. A common objective for all the workshops is to give participants the experience of discussing career issues with supportive, like-minded individuals, and to promote networking. This aspect of the workshops aligns well with the objectives of organizations such as WISE; in fact it provides a mechanism to achieve them.

Career Success: Skills and Strategies introduces the participants to the question of what and who controls individual career success, and addresses the reality that women in science and engineering fields often face special challenges in 'being heard' and gaining promotion. Participants learn about and begin to develop 'high value' skills such as assertive communication, organizational awareness, and networking and negotiating strategies, which will ensure recognition for their achievements and improve access to professional opportunities. This workshop is most effective in a full day format; it has also been delivered in a 3-hour format to fit timetable constraints and a further modified version is being offered at ICWES 12.

Appearances in the public media can be important career opportunities because they enhance credibility

and raise a woman's profile in her own and other organizations. There are additional considerations for women in science and engineering. If an audience is unaccustomed to hearing a woman speak as an expert on these topics, it has a tendency to evaluate her differently than a male speaker, with stereotyped assumptions about her role, credibility, and the content and importance of her message. *You and the Media* is a 6-hour workshop which provides information, practical experience through simulated interview situations, and positive feedback on giving effective interviews for print, radio and television, and also helps participants to identify the behaviours which may reinforce subtle stereotypes.

Most workshop participants know the basics of résumé writing and interviews. What else do they need to know to convince a prospective employer to hire a talented woman in the fields of technology, science, or engineering? In a four-hour session, the *Getting the Job Workshop* gives valuable tips on making résumés convincing, preparing for an interview, handling challenging questions, and enhancing career success. The interactive format provides opportunities for practice of techniques and discussion with professionals who have experienced both sides of the hiring process.

The Diversity Challenge: Practical Information for Managers is a two-hour workshop to support managers in pro-active initiatives to more effectively recruit, retain and advance talented women in their organizations. Managers interested in greater diversity in their area of responsibility sometimes see diversity as a recruitment issue, and hence a labour market issue. To gain the productivity and effectiveness benefits of diversity, and to ensure success for new employees, managers must foster diversity practice in the workplace before, during, and following successful recruitment. In practical terms, what must a manager do, and how might it affect the functioning of a department? The workshop presents information about gender schema, stereotype threat, and other concepts which underlie diversity awareness. It then provides practical tips for how to apply the concepts in everyday management. This workshop takes the approach that real change requires that the concerns be discussed frankly and thoughtfully. The interactive session gives each participant the opportunity to identify challenges and discuss solutions appropriate for their area of activity.

RESULTS TO DATE

Thirty-six women attended the first delivery of *Career Success*, with 93% of attendees (100% of

students) responding that the workshop was *highly* useful for their current work situation or future career. *The workshop was very informative and supportive...I feel empowered. I've gained more self-confidence and skills to advance in my career.*

The workshop was refined to focus on the topics participants found most useful, and 30 women attended two offerings of the revised workshop in Halifax in October 2001. In pre-delivery questionnaires, participants identified time, career/family balance, networking and resources as the main challenges to career success. Over 90% found all three workshop strategy areas - achieving recognition, networking and win-win negotiation - useful or highly useful. *Participating in this workshop has been a very productive use of my time.* Participants also identified other topics that would be important in their career development, among them, management skills, time management, and entrepreneurship.

As of spring 2002, *You and the Media* had been delivered twice to a total of 19 participants. All enthusiastically reported that the workshop was enjoyable and useful to them in areas encompassing increased self-confidence, the importance of preparation, having key messages, and developing the skills in controlling the interview direction. Participants spoke of their increased willingness to seek or respond to interview requests and several have reported on their having given more effective interviews as a result of the workshop.

Getting the Job was piloted for a group of graduating women technology, science and engineering students in early 2002, with all finding the content useful to highly useful. Particularly highlighted by participants were the components on effectively handling difficult questions, the importance of having a mentor, and the personal examples of the facilitators as both former job applicants and current employers.

An additional outcome of the *Career Success Workshops* has been the production of participants' workbooks and facilitators' guides published by CWSE.

The Diversity Challenge workshop was presented to federal government managers at the Bedford Institute for Oceanography in Halifax (coincident with the *Career Success Workshop* being delivered to 18 of their employees), and at two fora held in Newfoundland in October 2001. The sessions were highly positively evaluated and addressed the

strongly articulated need for information and practical initiatives. The professional development initiatives will continue to include this important audience to enable employers to strengthen diversity initiatives in general, and in particular to support the women in their organizations who have participated in the *Developing Leaders* events.

FURTHER DEVELOPMENT

Workshops are being developed on other handbook topics. The next to launch is one on *Academic Career Success Strategies* for women graduate students and new faculty members. It draws from the Academic Workshop at the *New Frontiers, New Traditions National Conference* (<http://www.cs.ubc.ca/~condon/ccwest/>) and similar workshops at CRAW (Computer Research Association, Women's Committee) conferences.

As the content of each workshop is developed, participant workbooks and facilitators' guides are being prepared. Facilitators will then be trained to deliver the workshops to interested groups throughout Atlantic Canada and Canada's far north. A mentors' guide will provide information about the workshop content, objectives and desired outcomes for managers and other mentors, so that they will be alert to assist with career planning and skill development.

The current informal pre- and post-workshop participant questionnaires are being developed into more formal evaluation and research tools. The data collected will assist with workshop improvements and provide a baseline for further research on the retention of women in science and engineering careers.

Becoming Leaders: a Handbook for Women in Science and Engineering and Their Mentors will be published in a limited run first edition in summer 2002 and will be available at ICWES 12. We anticipate a second edition within the next three years which incorporates new research and feedback from a much larger set of workshop participants.

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REFERENCES

1. Ranson, G. (1998). "Retention of Women in Engineering: Good News and Bad News from Alberta." presented at the CCWEST Women in the Workplace Conference: Achieving Harmony, Vancouver, B.C., May 21-23, 1998.
2. Alper, J. (1993). "The Pipeline is Leaking Women All the Way Along." *Science*, 260 (16 April 1993), 409-411.
3. Williams, F. M., and Emerson, C. J. (2001). "Feedback loops and critical mass: an engineering analysis of the flow of women into science and engineering." *World Wide Wisdom - 10th International Conference on Gender and Science and Technology*, Copenhagen, Denmark, 185-189.

APPENDIX

Becoming Leaders: A Handbook for Women in Science and Engineering and their Mentors

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