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BC and Yukon Region



Westcoast Women in Engineering,  
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# Annual Report

Year 2: September 2011 to August 2012

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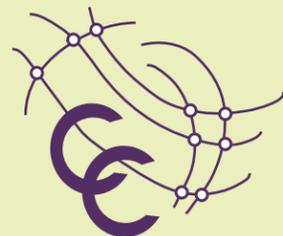
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Upcoming Event:

## Creating Connections:

### *Working Together to Transform our World.*

On May 11, 2013, the third biennial Creating Connections conference will bring together 200 women and men from industry and academia in science, engineering, and technology (SET) disciplines at various stages in their careers – students, new immigrants, industry professionals and people in transition – for a full day of personal and professional development, networking, and inspiration.

This year, the theme of Creating Connections is “Working Together to Transform Our World.” By supporting and enabling a **meaningful dialogue** about the role of women in SET, we will build capacity for individuals and organizations to engage in transformative and long-lasting change, creating a place where everyone can belong.

### Want to be involved?

- Encourage women and men in science, engineering, and technology fields and organizations, at any stage of their career, to attend. Save the date: May 11, 2013;
- Suggest outstanding women who would make great speakers, moderators or facilitators at conference sessions;
- Support the conference directly:
  - Become a conference sponsor;
  - Subsidize travel costs for those living outside Metro Vancouver;
  - Donate notepads, pens, umbrellas, or similar;
  - Donate door prize items.

Interested? Please contact us (see sidebar) – we would be very happy to discuss how you would like to be involved in Creating Connections.

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Please contact us if you are interested in getting involved in any of our initiatives, including:

- Creating Connections
- Leadership Development Workshops
- Community Service Learning
- Website profiles of successful women in engineering

This year has been highly productive for the NSERC Chair for Women in Science and Engineering - BC and Yukon Region. We have continued to build on the successes of our first year while reaching out even further to engage new stakeholders from industry, academia, and partner groups, working towards our mission: **to advance engineering and science as welcoming careers that serve our world through holistic understanding and creative, appropriate, and sustainable solutions.**

Last year, the board of Engineers Canada committed to an ambitious action plan to reach “30 by 30,” increasing the number of women in engineering to 30% by 2030. Since then, collaborative initiatives have started across the country in order to make this vision a reality. Some of our local initiatives are described in this report.

Thank you to our sponsors, supporters, and advisors – through your generosity, we continue to move towards seeing the realization of “30 by 30.” Paul Valéry, a French poet, once wrote, **“The best way to make your dreams come true is to wake up.”** With your help, our community is beginning to awaken to the value of a more diverse and representative profession.

Dr. Elizabeth Croft, Ph.D., P.Eng., FEC, FASME  
Chairholder

Jennifer Pelletier  
Manager

Noor Teja (January onwards)

Kyle Philibert (until April)

Justin Yang (May onwards)

Program Assistants



## WVWEST Collaborative Research Project Investigates Links Between Workplace Climate and Health & Well-Being

WVWEST, Dr. Toni Schmader from UBC Psychology, and Ph.D. student William Hall are collaborating on a ground-breaking project examining how conversational patterns in the workplace can affect the health, well-being, and job satisfaction of professional engineers. This project examines two important aspects of how workplace climate may counteract daily stress and contribute to health and wellness of workers: the policies that promote a safe, rewarding, and inclusive environment, and the interactions people have with others during the work day. Previous studies, including the 2011 “Stemming the Tide” report by Fouad and Singh, cite workplace climate as a key factor in women leaving the engineering profession.

This research project has involved asking engineers throughout British Columbia to complete a series of online surveys over a two-week period. These surveys measured the perceptions of the interpersonal environment and policies in the work place. Survey respondents also completed validated measures of general health, life satisfaction, and career engagement. A number of participants working in Greater Vancouver were also invited to take part in a health monitoring portion of the study.

The researchers have specifically focused on the dynamics of workplace conversations, as well as broader aspects of workplace culture and the ways these might be related to employee health and well-being. While data collection is still ongoing, early analysis suggests that the strongest predictor of poor health is the experience of interpersonal exclusion – engineers who reported feeling “left out” at work had worse health outcomes. In fact, the experience of interpersonal exclusion was a stronger predictor of poor health than other variables such as job demands, body mass index (BMI), smoking, and exercise. These results are preliminary but highlight an often overlooked way in which the social environment of the workplace contributes to health and productivity.

We are actively looking for individual volunteers and companies who are interested in participating in this project. For more information, please visit [wwest.ca/projects/in-industry](http://wwest.ca/projects/in-industry), or email [wmhall@psych.ubc.ca](mailto:wmhall@psych.ubc.ca).

[www.wwest.ca](http://www.wwest.ca)



a place of mind

THE UNIVERSITY OF BRITISH COLUMBIA



### About the Chairholder

Elizabeth A. Croft (Ph.D., P.Eng., FEC, FASME) is the NSERC Chair for Women in Science and Engineering, (BC & Yukon Region), and a Professor at The University of British Columbia (UBC). As Chair, Dr. Croft leads Westcoast Women in Engineering, Science, and Technology (WWEST) whose mission is to promote Science and Engineering as an excellent career choice for women and other under-represented groups, and to identify and eliminate barriers that result in attrition from these career paths.

Dr. Croft is the Director of the Collaborative Advanced Robotics and Intelligent Systems (CARIS) Laboratory at UBC. Her research investigates how robotic systems can behave and be perceived to behave in a safe, predictable, and helpful manner, and how people interact with and understand robotic systems.

### Selected as a National Leader

Dr. Croft has been selected to Chair the National Chairs for Women in Science and Engineering Network, connecting and linking the five regional NSERC Chairs to share best practices and strategize on a broader scale. An additional part-time Program Assistant was added to the WWEST team to support this work.

### On Academic Climate

Dr. Croft is currently serving as a co-principal investigator in a climate study being undertaken at the Faculties of Science and Applied Science at The University of British Columbia. The climate study seeks to identify, understand, and remediate aspects of the academic climate that are contributing to systemic barriers to women's participation in STEM disciplines.

### Activity Sampler

WWEST is involved in so many different projects it is impossible to feature them all here. Other highlights from this year include:

- WWEST partnered with UBC Engineering Recruitment to run our second yearly training session for high school educators. While introducing easy to run SET activities for the classroom that directly relate to BC Prescribed Learning Outcomes, we underscore the pedagogical value of SET in high school curricula to develop skills in critical inquiry, and discuss the role of a teacher and role model in a female student's educational choices.
- Dr. Croft is serving on the Search Committee for a new Dean for Applied Science.
- WWEST has continued its work in coordinating Community Service Learning (CSL) activities in the engineering curriculum by developing coursework to link both theory and practice of Global Engineering Leadership, including an optional practicum held in Chiapas, Mexico.
- Dr. Croft is a co-author on a national study of career expectations for students graduating from Engineering and Computer Science.
- WWEST worked with local industry leaders to organize the Women in Engineering Industry Leadership Forum.
- Dr. Croft has been an invited speaker or keynote for Women in STEM groups at UBC, BCIT, SFU, Women in Mining, SCWIST, APEGGA, and others.

### WWEST Partners

The WWEST Partners program provides funding and training for community non-profit organizations that undertake activities to promote outreach, recruitment, and retention for girls, young women, and industry professionals. Grants are intended to provide seed or expansion funding, are single- or multi-year, and range up to six thousand dollars per project.

#### Current WWEST Partners

- Women in Engineering, Vancouver Region: professional development workshops
- The Society for Canadian Women in Science and Technology: Annual workshop series
- UBC GIRLsmarts: Computer science workshop for grade six girls
- Girls Exploring Physics, SFU: Workshops to introduce grade nine and ten girls to physics
- GEERing Up! UBC Engineering & Science for Kids: Workshops at elementary schools and science summer camp at UBC
- IEEE Women in Engineering Group, Vancouver: STAR outreach program
- UBC, Department of Physics and Astronomy: Outreach program for grade 6-8 girls
- Women in Science and Engineering, UBC Okanagan: Networking events
- UBC WISE: Networking event for undergraduate students and industry mentors
- BC Young Women in Physics Canada Conference: Academic conference convening women in physics and engineering to share experiences and network
- BC Women in Science and SFU Women in Engineering Group: Collaboration initiative
- SFU Women in Engineering Group and SFU Women in Computer Science: Corporate opportunities program
- Canadian Undergraduate Math Conference: "Women in Mathematics" dinner event
- Leadership through Diversity at UVic: Student-run group to enable engineering students to be involved in leadership opportunities

WWEST will be receiving proposals for new partners in the fall. For more information, please visit [wwest.ca/wwest-partners](http://wwest.ca/wwest-partners)

### WWEST in Industry

In October 2011, Westcoast Women in Engineering, Science, and Technology brought the WinSETT Centre to BC to offer the first level of their "Becoming Leaders" workshop series – a professional development workshop targeted specifically at women in science, engineering, and technology fields. Facilitators from WinSETT and WWEST teamed up to deliver the thought-provoking, inspiring, and participatory workshops at four host companies in four different communities: WorkSafeBC in Richmond, Stantec in Kelowna, WorleyParsons in Victoria, and Teck in downtown Vancouver. Workshops were attended by a mixture of women from each host company, other women in industry, and senior students.

Each workshop included an overview of the need for women's leadership; gender factors that influence success; leadership competencies; a group brainstorming activity around the strengths and challenges women bring to leadership and strategies to exploit this knowledge; leadership planning; guest speakers; sharing tips and strategies; and a video presentation on vision, values and courage.

In addition to direct feedback about the workshop coordinated by the WinSETT Centre, WWEST measured changes in the career self-efficacy of participants. Self-efficacy is defined as one's belief in one's own ability to succeed in a specific competency area. It differs from the concept of self-confidence in that it is very specific to one set of competencies. For example, a person may be very self-confident, but not have self-efficacy in her ability to play soccer.

WWEST adapted a version of Rigotti, Schyns, and Mohr's (2008) Occupational Self-Efficacy Scale. The scale uses six questions to predict self-efficacy, and was administered as a pre- and post-test. Each question was measured on a 5-point Likert-type scale. Because the resulting data is discrete, Pearson's Chi-Squared test was used to determine whether the change in scores between the pre-test and post-test were statistically significant. The findings suggest a positive change for each measure, with five of the six changes being statistically significant.

WWEST will be profiling new WinSETT workshops for diversity leaders at the upcoming APEGBC AGM in October 2012.

**Table: Changes and Statistical Significance in Pre-Test and Post-Test Means of Self-Efficacy Surveys**

| Question   | Pre-Test Mean | Post-Test Mean | Change | Significance  |
|--|---------------|----------------|--------|---|
| Going forward, I feel I will remain calm when facing difficulties in my job because I can rely on my abilities.  | 3.78          | 4.31           | + 0.53 | $X^2(4,N=101) = 15.05$<br>$p < 0.01$ <b>Significant</b> |
| Going forward, I feel that when I am confronted with a problem in my job, I will usually find several solutions. | 3.92          | 4.27           | + 0.35 | $X^2(4,N=101) = 6.45$<br>Not significant                |
| Going forward, I feel whatever comes my way in my job, I will usually handle it.                                 | 3.88          | 4.37           | + 0.49 | $X^2(4,N=101) = 12.43$<br>$p < 0.05$ <b>Significant</b> |
| Going forward, I feel well prepared for my occupational future.  | 3.64          | 4.04           | + 0.40 | $X^2(3,N=101) = 7.86$<br>$p < 0.05$ <b>Significant</b>  |
| Going forward, I feel I will meet the goals that I set for myself in my job.                                     | 3.82          | 4.28           | + 0.46 | $X^2(4,N=101) = 9.79$<br>$p < 0.05$ <b>Significant</b>  |
| Going forward, I feel prepared for most of the demands in my job.  | 3.66          | 4.14           | + 0.48 | $X^2(4,N=101) = 9.67$<br>$p < 0.05$ <b>Significant</b>  |

### Reflections from Creating Connection 2.0

In September 2011, WWEST convened 150 female engineering students, industry professionals, and women in transition to provide support, networking, mentorship, and partnerships through a one-day, high-impact conference held at UBC. Participants attended workshops on topics ranging from success in academia to professional networking, from leadership development to community-building.

One student recently wrote to us, "...I just wanted to let you know that the conference hugely benefited me. I met my current co-op employer at that conference and was given the opportunity to speak with him and get exactly the type of co-op job I wanted for my first term. The first co-op term is hard to find a job, and I was able to get exactly what I wanted thanks to the conference."

### WWEST Networks

In addition to connecting women from the BC and Yukon to larger groups such as the Chairs for Women in Science and Engineering Network and the Canadian Committee on Women in Engineering, WWEST has worked to facilitate more informal networks among professional women in BC and Yukon by acting as a hub for communication and a source for expertise.

### Keep in Touch with WWEST

 **WWEST Digest**  
A semi-monthly mailing list.  
Subscribe by emailing  
[wwest@mech.ubc.ca](mailto:wwest@mech.ubc.ca).

Keep in touch with us through your favourite social media network! We'd love to hear from you. Click through [www.wwest.ca](http://www.wwest.ca)

