GOING THE DISTANCE:
Examining Three Years' of Data from a Prospective Longitudinal Evaluation Study

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The 35th Annual PNAIRP Conference

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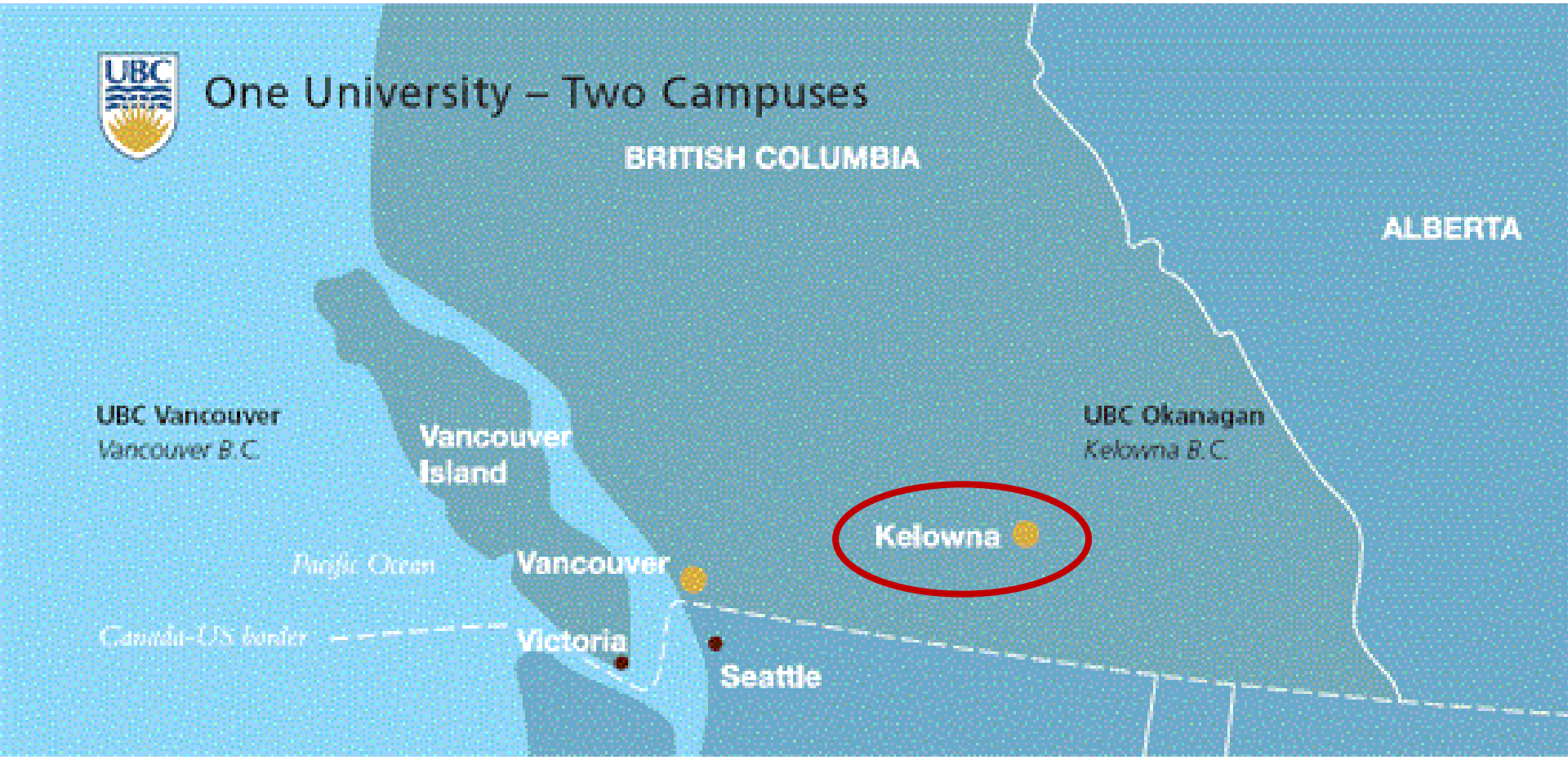
a place of mind
THE UNIVERSITY OF BRITISH COLUMBIA
Okanagan Planning and Institutional Research

The University of British Columbia

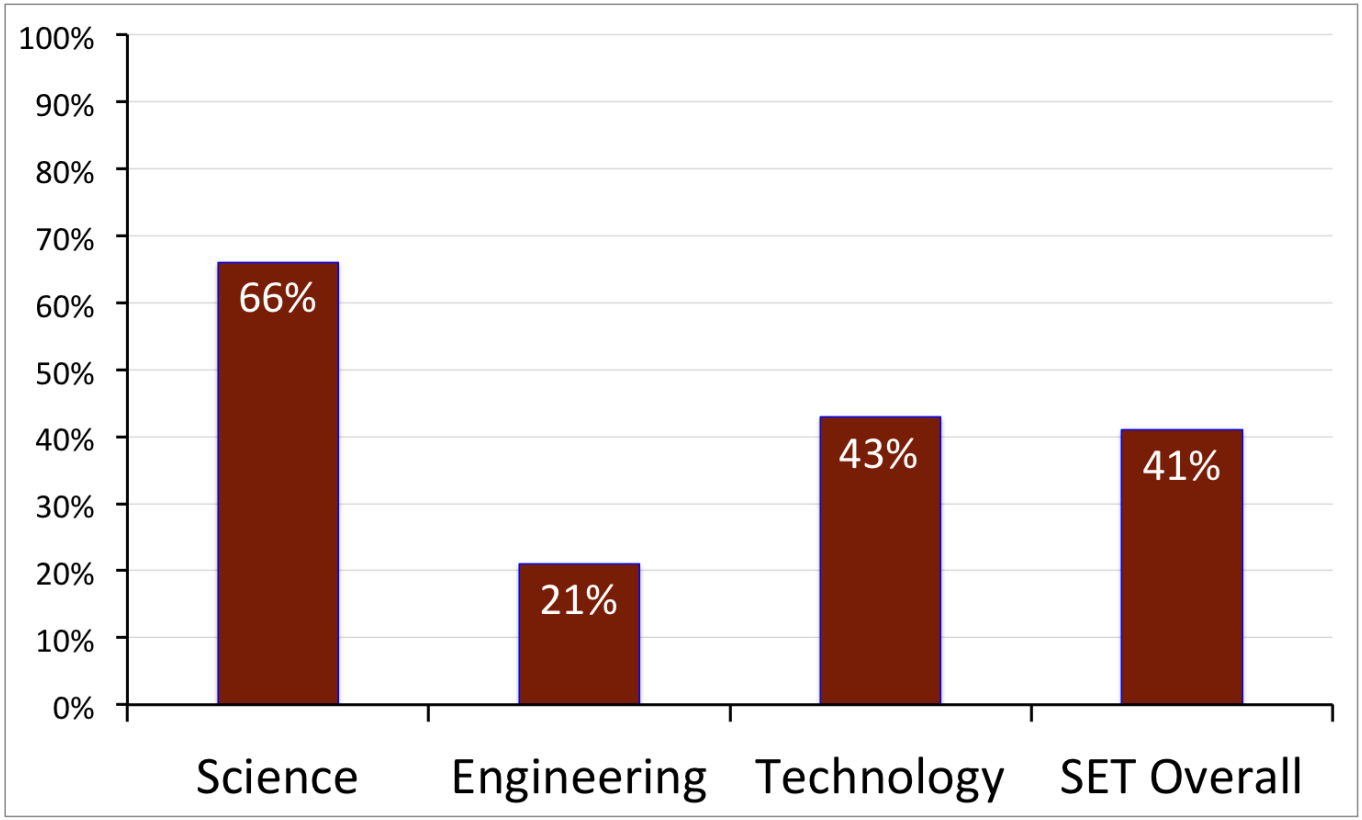


UBC's Okanagan Campus

WHY A MENTORING PROGRAM FOR WOMEN IN SCIENCE AND ENGINEERING?

“You’ve come a long way, baby!”

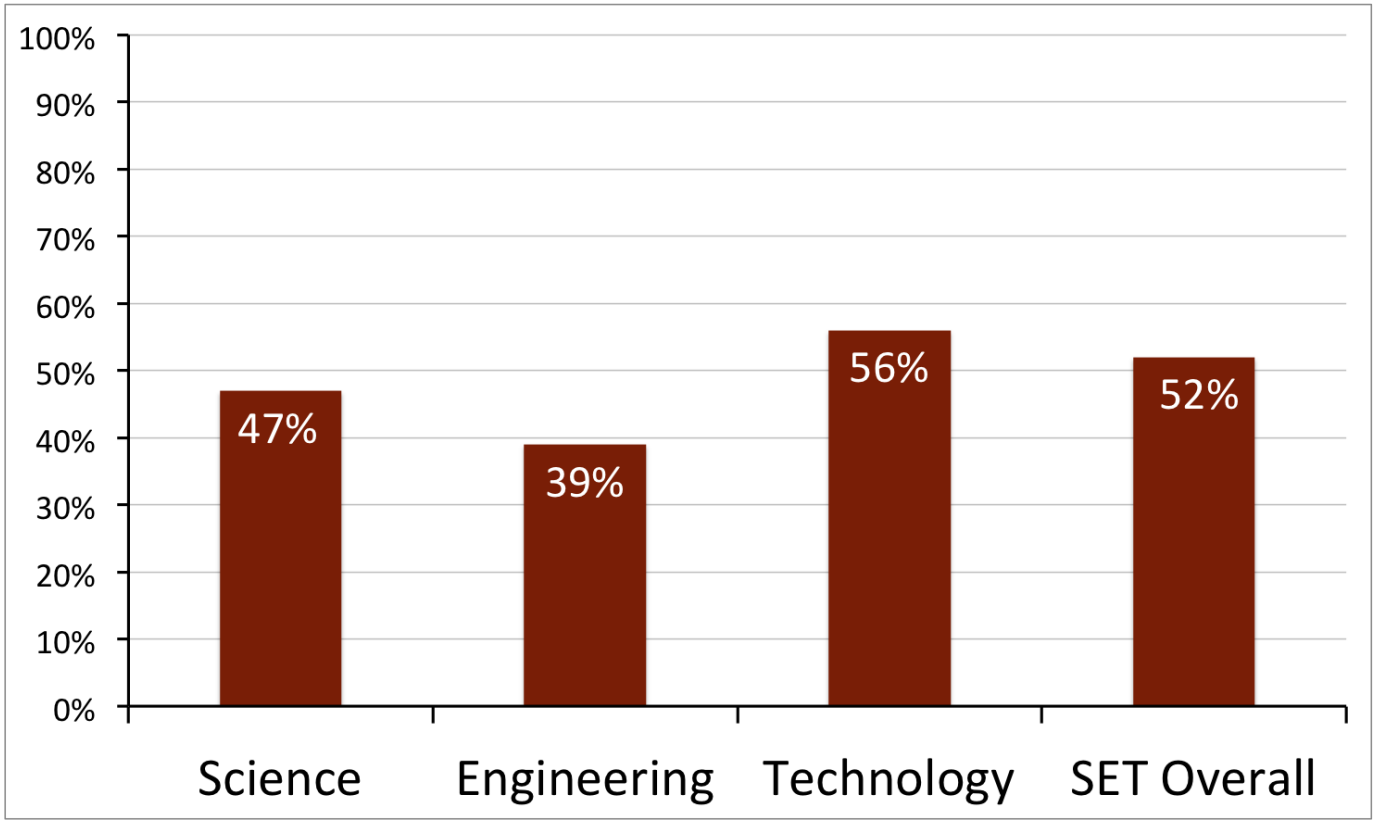
Female talent ages 25-29 in private sector SET careers



Hewlett, S.A. *et al*. 2008. The Athena factor: reversing the brain drain in science, engineering, and technology. Harvard Business Review: Research Report. Figure 1.1

“Not so fast, baby!”

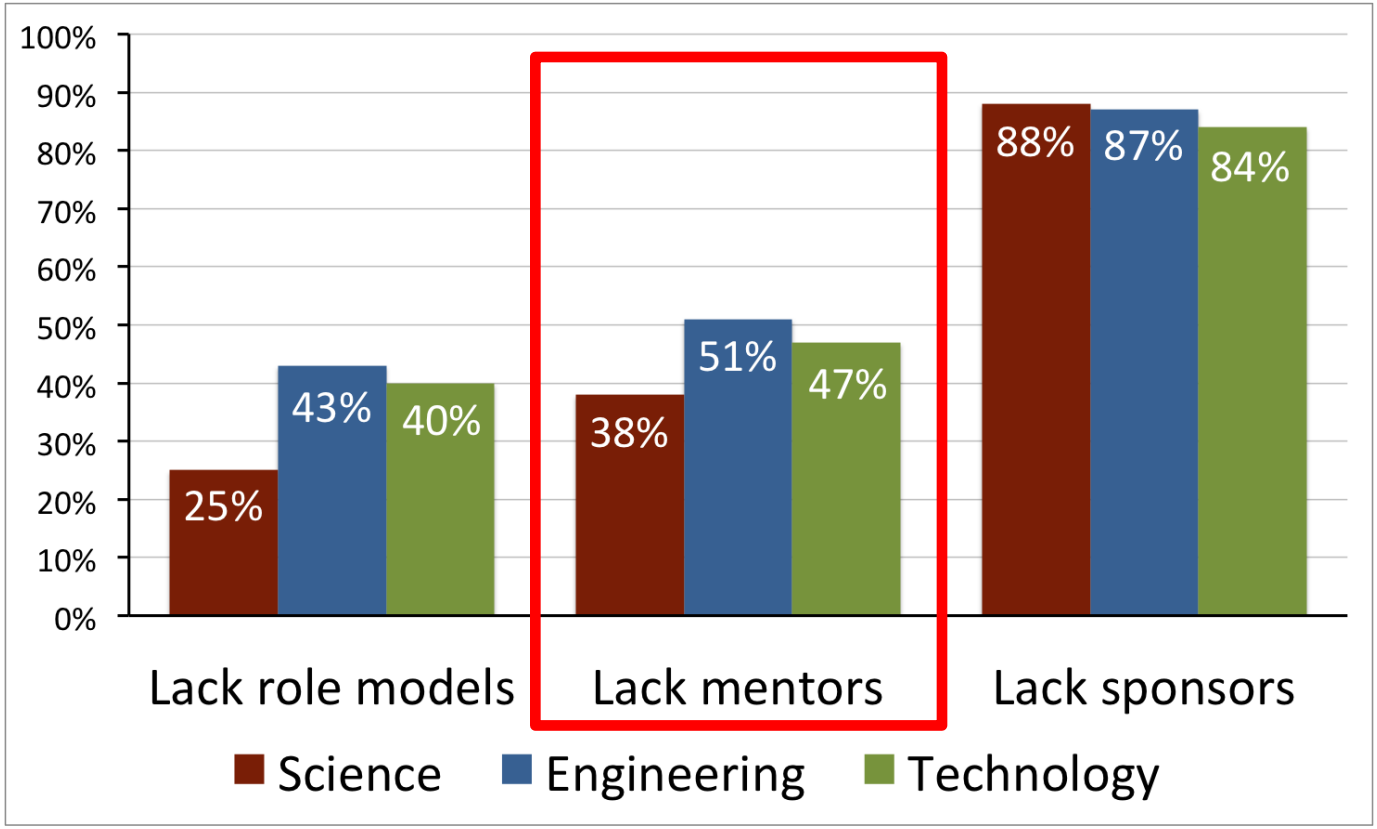
Female quit rates across SET



Hewlett, S.A. *et al*. 2008. The Athena factor: reversing the brain drain in science, engineering, and technology. Harvard Business Review: Research Report. Figure 8.1

What's the problem???

Lack of role models, mentors and sponsors across SET



Hewlett, S.A. *et al*. 2008. The Athena factor: reversing the brain drain in science, engineering, and technology. Harvard Business Review: Research Report. Figure 3.2

Mentoring Relationships in University

- Provide students with role models
- Increase student self-confidence
- Demonstrate the connection between academics and career
  - Students gain a better understanding of the expectations for professional performance
- Mentoring of females has been found to be a successful avenue to increase number of women entering scientific careers post-graduation

(Anderson, 2005)

Goals of the WiSE Mentoring Program

1. To raise students' awareness about the issues faced by women with careers in science and engineering.
2. To provide students with tools, strategies and confidence to enable them to succeed in their future careers in science and engineering.
3. To expand the knowledge base about how formal mentoring programs contribute to young women's academic success and their transition into professional careers in science and engineering.

The WiSE Mentoring Program Triads

- Professional from industry/graduate student
  - BC Ministry of the Environment
  - Waterplay Solutions
  - Regional District Northern Okanagan
  - Mathtoons Media
  - Urban Systems
  - Ecoscape
- Senior student
- Junior student

WiSE Mentoring Program Participation

	2011/12	2012/13	2013/14	2014/15
		MENTEES		
Science	24	27	35	25
Engineering	13	8	5	5
Total	37	35	40	30
		MENTORS		
Science	10	12	13	11
Engineering	5	5	8	4
Total	15	17	21	15

Fall Activities

Summer: Applications from students & mentors

September: Info session for interested students

September: Mentee and mentor orientation sessions

Fall Activities

October: Mentor/mentee introduction session

November: Mentee professional development workshop (Setting Goals; Mock Interviews; personality assessments)

Winter Activities

January: Professional Development Event

(Imposter Panel; Digital Footprint;

An assertive approach to negotiation)

Winter Activities

March/April: Year-end celebration

WiSE Online

Monthly emails: themes with article links

October:	*Setting Goals*
November:	*Communication*
December:	*Networking*
January:	*Self-confidence*
February:	*Dealing with conflict*
March:	*Work-life balance*
April:	*Networking revisited*

wisementoring

facebook.com/
wisementoring

Website: wise.ok.ubc.ca

HOW AND WHY DID OPAIR BECOME INVOLVED?

Costs of the Evaluation

- 2 student research assistants **$8,000** per year
  - 10 hours per week for 2 terms, $13 to $16 / hour
  - UBC work study program pays $9 / hour we pay the rest
- 4 online surveys a year
  - 40 hours of our time with student researchers
  - Use our online survey program
- 4 mentee focus groups per year **$500** per year
  - To cover the cost of food and beverages ~ $125 per group

In Kind Support from OPAIR

- ~ **100 hours** per year
  - Student research training and supervision
  - Ethics application (annual renewal)
  - Online survey preparation, management, ongoing guidance to students with analysis
  - Facilitate the mentee focus group sessions
  - Conduct the mentor interviews
  - Disseminate research findings to planning committee members
  - Support students presenting at conferences

Funding

UBC Okanagan

- Equity & inclusion Office
- School of Engineering
- I.K. Barber School of Arts & Sciences
- Office of the Provost and Vice-Principal
- Office of the Deputy Vice-Chancellor and Principal

Professional Engineers and Geoscientists of BC

THE VIEW

URBAN systems

Liquidity Okanagan Falls

WWEST Westcoast Women in Engineering, Science & Technology

REDROOSTER WINERY

PROSPECTIVE LONGITUDINAL STUDY

Our mentoring program is unique…

- Mentoring Program – in our 4th year
- Prospective Longitudinal Study
  - Pre-program survey
  - Focus groups (Mentee)
  - Phone interviews (Mentor)
  - Post-program survey

Prospective Longitudinal Study

1. To gain insight into the mentoring program by identifying the activities and outcomes of the program
2. To assess the impacts of the program by identifying the successes and areas for growth
3. To understand how the program affects participants in terms of their immediate and long-term academic and career goals

Data Collection

- Pre- and post-program online questionnaires for mentees and mentors
- Mid-program
  - focus groups for all mentees
  - telephone interviews for all mentors
- Post-event reflection exercises for mentees

USE OF RUBRICS

VALUE Rubrics as Analytic Tools

- Valid Assessment of Learning in Undergraduate Education (VALUE) rubrics
- Developed by the Association of American Colleges and Universities (AAC&U)
- Developed in partnership with 100 faculty and other experts
- Adapted *Civic Engagement* and *Integrative Learning* Rubrics for the WiSE Mentoring Program
- http://www.aacu.org/value/index.cfm

Definition: Integrative Learning VALUE

- an understanding and a disposition that a student builds across their program of study and their experiences in the WiSE mentoring program.
  - making simple connections among ideas and experiences to
  - synthesizing and transferring learning to new, complex situations within and beyond the UBCO campus.

Integrative Learning VALUE Rubric

	Capstone 4	Milestones 3	2	Benchmark 1
Connections to Experience				
Connections to Discipline				
Transfer				
Integrated Communication				
Reflection and Self-Assessment				

Example: Open-text Survey Question

Based on your experiences with the mentoring program and with your mentor, what types of professional behaviours do you think will be expected of you in your future career?

Integrative Learning VALUE Rubric

	Benchmark 1
Connections to Experience	**Identifies** connections between experiences in the mentoring relationships and those academic/professional texts and ideas **perceived as similar and related** to own interests.

Integrative Learning VALUE Rubric

	Capstone 4
Connections to Experience	Meaningfully **synthesizes** connections among experiences in the mentoring relationship to **deepen understanding** of the fields of study and to broaden own points of view.

Integrative Learning: Score = 1

Based on your experiences with the mentoring program and with your mentor, what types of professional behaviours do you think will be expected of you in your future career?

"The behaviours I have now. I've worked in the professional field of my program so I feel I have a good understanding of how to act."

Science (Chemistry) student – Senior Mentee

second year in WiSE

Integrative Learning: Score = 4

Based on your experiences with the mentoring program and with your mentor, what types of professional behaviours do you think will be expected of you in your future career?

"Being yourself but always working hard and being open to not just working with the things you've learned but branching out and learning many more new skills along the way to adapt to the work."

Science (Biology) student – Senior Mentee

second year in WiSE

Adapting and Applying VALUE Rubrics…

- Three different coders initially (inter-coder reliability)
  - Apply the rubric to open-ended survey responses
  - Discuss any differences in coding
  - Modify wording of criteria
  - Apply rubrics again

- **Test rubrics with new coders**

Benefits of Using VALUE Rubrics

- The criteria and expectations in the VALUE rubrics are aligned well with the objectives of the WiSE Mentoring Program
- Helps make evaluative judgments about the WiSE program to shape future directions
- Provides rich evidential picture of the WiSE Mentoring Program

FOCUS GROUPS

Modified Use of Focus Group

- Interactive data result in more in-depth discussion
- Improved access to mentees' own understanding of what mentoring is to them
- Better understanding of mentees' own needs
- Opportunity to observe the co-construction of meaning about mentoring for students

Based on Wilkinson (1998)

Co-construction of Knowledge

Mentee A: "If I remember correctly, I think in Canada there are a list of questions they legally cannot ask you"

Mentee B: "Oh."

Mentee A: "And I think you can find it on like, one of the provincial websites for like, work."

…

Mentee B: "I didn't even know that existed!"

Better Understanding of Mentee Needs

Facilitator: "We have some comments from a different focus group… that they don't actually feel that there is an issue between genders… in the workplace and that that was maybe an old way of being and that it's not that way anymore. Do you feel that way?

Better Understanding of Mentee Needs

Mentee C: "I disagree completely." (Laughter)

Mentee D: "I think it depends on the industry you're going into as well because some industries there's a way better balance than there used to be"…

Mentee E: "Working at the company that I worked for last summer…everybody higher up was – it was men running the company."

Why is this approach effective?

- Focus on how opinions are formed/expressed & sometimes modified within the context of discussion and debate with others while being respectful
- Honours the importance of the social context in knowledge creation – sharing/discussing with peers rather than in isolation
- Semi-structured approach enables mentees to co-construct responses, encourage mentees to build off one another (Wilkinson, 1998)

What We've Learned Overall So Far…

- The triad is the best structure
- Mentors and mentees wanted more structure than we anticipated
- Longer involvement = more sophisticated responses
- Almost all mentees find participating in WiSE to be a rewarding experience academically & personally
- Most mentees have gained confidence to pursue their career and academic goals through their mentoring relationships

What We've Learned Overall So Far…

- Mentees have a clearer understanding of the issues facing women in the profession
  - More information about attrition in the field needs to be shared with mentees at the start of the program
- Mentees feel more comfortable in giving and receiving constructive feedback
- Mentees feel more confident in showing initiative
  - We see an increased shift for more mentees after the focus group sessions

What We've Done As A Result…

- **Based on our results from the first year:**
  - Provided more structure and guidance for first-time mentors and mentees
  - We added reflection exercises for mentees
- **Based on our results from the second year:**
  - Excluded first-year students
  - Added a November workshop at the request of mentees and mentors
  - Provided a social evening solely for mentors
  - Send out monthly themes for discussion points

What We've Done As A Result…

- **Based on our results from the third year:**
  - Continue to offer the mentor social evening
  - Build on the success of the Imposter Panel to inform the professional development workshop in January on confidence
  - Expand the sponsorship model to include more industry partners
  - Started to disseminate our results at conferences
  - Use the VALUE rubrics to analyze our mentee responses, improve programming and redesign our survey questions

Next Steps…*'Til Death Do Us Part*

- Working on research ethics application for the second phase of the study
- Students enter Phase Two upon completion of their studies at UBCO
- Students will complete an annual online survey about how the WiSE Mentoring Program supported the transition to their career or further study
- Periodically participate in an interview
- We track them until they retire, or…

QUESTIONS AND DISCUSSION

THANK YOU!