Why Mentor Women Engineers?

The 30 by 30 goal is Engineers Canada’s commitment to raise the percentage of newly licensed engineers that are women to 30% by the year 2030. This national goal has been endorsed by all 12 Canadian engineering regulatory bodies (including Engineers Geoscientists Manitoba), and many engineering schools (including the Faculty of Engineering at the University of Manitoba).

In 2016, 15.1% of newly licensed engineers in Manitoba were female—a long way off from the target of 30% [1]. Currently, the percentage of female students enrolled at the University of Manitoba in undergraduate engineering programs sits at approximately 24.2% [2], while the percentage of female professional engineers is approximately 10.1% [3]. This data shows that while there is still work to do to increase the recruitment of females into engineering education programs, there is also a strong need to support women during their engineering education and as they progress through their careers in order to strengthen retention.

Through CIPWIE meetings involving female engineers from a variety of industry sectors, we identified mentorship as a valuable tool to help address the female engineering retention issue and move Manitoba towards achieving the 30 by 30 goal. Mentorship has long been known as an effective way to support skill development and learning, and can lead to increased career satisfaction and retention. Successful mentoring relationships can also extend well beyond knowledge transfer and develop into life-long relationships that are mutually beneficial to all involved [4].

While mentorship programs do exist within Manitoba’s engineering industry, there were no programs offered specifically for women in engineering or that span all engineering disciplines or industry sectors. To this end, the CIPWIE Mentorship Program was developed in 2015/16. Since then, the program has grown from an initial cohort of 70 participants to 121 participants in the 2017/18 offering. To date, nearly 300 women have participated in the CIPWIE Mentorship Program!

The Numbers: Women in Engineering in Manitoba

*based on 2016 data

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering Students</td>
<td>24.2%</td>
</tr>
<tr>
<td>Newly Registered</td>
<td>15.1%</td>
</tr>
<tr>
<td>Overall P.Eng. Pool</td>
<td>10.1%</td>
</tr>
</tbody>
</table>
The overall goal of the CIPWIE Mentorship program is to build a community of women in engineering in Manitoba.

For the **Student**, the program provided:

- Insight into what it's like to be a working engineer/geoscientist
- An understanding of specific engineering disciplines
- An opportunity to network with female engineers

For the **Protégée**, the program provided:

- Insight into what it's like to be a working professional engineer/geoscientist
- Experience in mentoring, coaching, and developing interpersonal relationships
- The opportunity to be a role model
- An opportunity to network with other female engineers/geoscientists

For the **Mentor**, the program provided:

- An opportunity to share their passion for their chosen field
- Experience in mentoring, coaching, and developing interpersonal relationships
- The opportunity to be a role model
- A medium for influencing the future of the profession

"There are so many different paths which one can take in this field and I would love to have the chance to learn from someone who has gone through it."

2nd Year Computer Engineering Student

**Program Structure**

The program aimed to match one Mentor with one Protégée and up to two Students in a tri-mentorship team. The program included an orientation session and four formal mentorship events held between October and March. In addition to the formal events, participants were expected to be in contact with their team at least once per month. This informal interaction was to be student-driven to provide an opportunity for students to develop their networking and communication skills.

**The Mentors**

The program was open to female Professional members who had a willingness to embrace the role of mentor. 36 Mentors were part of the 2017/18 program, including three P. Geo.’s.

"Mentorship is very important me and I’ve had a great experience as a past mentor. Making connections with and supporting other women in the industry helps us all to become more successful."

CIPWIE Mentor

More than half the Mentors had at least 5 years of experience as a professional and came from a variety of disciplines, including Mechanical (35.3%), Civil (29.4%), Biosystems (14.7%), Electrical (8.8%), Geology (5.9%), and Industrial (5.9%).

**The Protégées**

The program was open to female interns (EIT’s and GIT’s) who had a willingness to embrace the role of mentor. The 2017/18 program included 29 Protégées (with one GIT).

"As an EIT, I appreciate that I am paired with both a P.Eng. and a student. And I like how the events are fun, not just your typical networking event."

CIPWIE Protégée

Intern participants came from seven disciplines, including; Civil (40.7%), Electrical (18.5%), Mechanical (14.8%), Biosystems (11.1%), Computer (7.4%), Geology (3.7%), and Chemical (3.7%).

**The Students**

The program was open to female undergraduate engineering students in at least their 2nd year of study (in which discipline selection occurs, which allows for better mentorship team matching). 56 Students were included in the 2017/18 offering, including two from Geology. All engineering disciplines and year of study were well represented in the Student cohort. When students were asked in the registration survey why they were applying to be part of the program, 69% indicated that they were "unsure, that’s why I’m applying to the Program!". This further demonstrates the need for a program that exposes women to the various career options within the engineering profession and highlights the existing shortage of female role models.
Events

The 2017-18 CIPWIE Mentorship Program included four formal events. Event #1, held in mid-October 2017 was the kick-off event in which teams met face-to-face for the first time. The event consisted of a team icebreaker and design challenge, and completion of a Mentorship Agreement outlining the teams ground rules, goals, and expectations for the mentoring relationship. The event ended with time for networking.

Due to the large size of the group (121 participants), Event #2 was broken out into three separate industry tours held during consecutive weeks in November. Teams (or individuals) could sign up to attend tours of the University of Manitoba’s Central Energy Plan, the Composites Innovation Centre, or Winnipeg’s Southwest Rapid Transit Project at Stadium Station (Investor’s Group Field). Each tour included a technical briefing, highlighting the engineering associated with the venue, and time for networking.

The third event provided an opportunity for participants to learn about Unconscious Bias in an interactive session facilitated by Dr. Indra Kalinovich, EIT. Participants were provided with some examples of unconscious or implicit biases and, in groups, discussed measures that could be put in place in their workplace or institution to mitigate the effects of these biases. The event also provided an opportunity for networking.

The final event, held in late March 2018 allowed participants to explore their creative side by painting rustic wood signs with inspirational quotes. This fun, wrap-up event allowed for ample networking in a relaxed environment.

At all events, held from approximately 5:30-8:30 pm to accommodate work and school schedules, food and refreshments were served, which constituted the majority of the program’s budget.

Feedback

Program participants were given the opportunity to provide ongoing feedback and recommendations for the Mentorship Program via electronic surveys administered after each event and at the end of the program.

Some of the feedback gathered includes:

- 76% of participants rated the compatibility of their mentorship team as 4 or 5 out of 5.
- 83% indicated they would reapply to the Program in future years
- 63% said they were ‘definitely’ or ‘likely’ to stay in contact with their mentorship team
- the frequency of contact between Students and their mentors averaged once per month (beyond formal events)
Lessons Learned and Recommendations

• Expanded Mentorship Handbook with suggestions for informal mentorship activities.
  We found that some teams (and students in particular) struggled to find ideas for ‘conversation starters’ with their team, or team activities that could be undertaken between formal events. The Mentorship Handbook provided to participants will be updated to include this type of information.

• Additional events or optional ‘meet-ups’.
  Feedback from participants indicated that many would like opportunities to meet up with their teams, and other teams, more frequently than just at the four formal events. For the 2018/19 offering of the program, we plan to incorporate at least two optional ‘meet-up’ type events.

• More time for networking.
  Participants consistently indicated that networking was one of the most valuable parts of the Program. Efforts will be made to incorporate more time for networking opportunities in future offerings of the program.

• Additional developmental support for students.
  It was noted by both the Program coordinators and the more senior Mentors in the program that students would benefit from additional support with regards to professionalism (e.g. answering emails in a timely and professional manner, RSVP’ing to events, networking skills, etc.). Additional supports for students will be included in the updated Mentorship Handbook.

Acknowledgements

The CIPWIE Mentorship Program would not be possible without the help and cooperation of many individuals and groups. The Program was administered by Engineers Geoscientists Manitoba’s Committee for Increasing the Participation of Women in Engineering (CIPWIE) and generously funded by the University of Manitoba – Faculty of Engineering, Friends of Engineering (Manitoba) Inc., the NSERC Prairie Chair for Women in Science and Engineering, Dr. Annemieke Farenhorst, and Engineers Geoscientists Manitoba.

We would like to acknowledge and thank the many female engineers who so generously volunteered their time to participate in this Program. They did so with enthusiasm and commitment, contributing many ideas and suggestions to help improve the Program.

Financial support for the 2017/18 CIPWIE Mentorship Program was provided by:

References


[3] Unpublished data obtained from Engineers Geoscientists Manitoba on April 20, 2017