EXECUTIVE SUMMARY
ONWiE SUMMIT (NOV. 20th, 2015)

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March 10th, 2016

To celebrate the Ontario Network of Women in Engineering's (ONWiE's) tenth anniversary, we held a summit at the University of Waterloo on Friday November 20th, 2015. Representatives from almost all the ONWiE members were there as well as some guest from the Ontario Society of Professional Engineers (OSPE), representatives from the University of Calgary and UBC, the engineering change lab, engineering students and industrial supporters. In total 40 people attended. The purpose of the summit was to bring the ONWiE members together to reflect on the past ten years of collaboration as well as consider our future together and priorities we should focus on. Specifically, amongst the series of talks and presentations during the day, we included some interactive sessions that focussed on three prompts together, namely:

1) What's working and why
2) What is still a challenge and what would make a difference
3) What is happening in 2025?

This allowed us to discover the many areas where we share common aspirations vision of the future of engineering education and outreach and the many ways we can collaborate together to realize our collective goals.

What's working and why

There was widespread agreement that the collaborative model of ONWiE to approach outreach activities across Ontario was working well and provided leverage as a provincial voice for issues related to diversify in engineering. The ONWiE model of collaboration amongst the Universities that has led to benefits that extend beyond running outreach programs together from an administrative perspective. Specifically there was widespread agreement that the following aspects on the ONWiE programs worked extremely well:

a. Early engagement with the girls (i.e. starting in grade 4) before mindset beliefs around girls role in the world are fully formed.

b. Engaging hands-on activities in a female-centric space

c. Parents as partners in outreach

d. The use of female undergraduate student as "near peer's allows the girls to see themselves as future engineering students

Given the chance to try it for themselves in a safe, supportive environment, girls gain confidence in activities connected to engineering. Female undergrads are a powerful and important aspect to influence our future generation of engineers. The power of in-person role models and 'near-peers' allows girls can more easily see themselves in those roles.

One of the unique advantages of ONWiE programming is the engagement of parents as partners in guiding young girls past stereotypes and self-imposed limitations and into a mindset of possibility around a career in engineering.

Giving girls the opportunity to work together, dream up something new, and see examples of the social, environmental and humanitarian-related implications of engineering, and positioning it as a caring, 'helping' profession is a very effective way to capture their interest.

When contemplating their future, girls enjoy the chance to imagine not just a job, but the life they will have and how they will feel about it. Asking them what they love to do and speaking to their emotional side helps them to see how engineering could be a part of that life. Storytelling is an important tool in 'painting the picture' for the girls, and doing so in a way that actively dispels stereotypes.

What's still a challenge and why

Despite progress on attracting more women to study engineering at Faculties and Schools of Applied Science and Engineering across Ontario, persistent negative attitudes and stereotypes persevere both at the Universities and in the engineering workplace. The engineering culture shows up as macho, militant, and rewards and values competitive, aggressive behaviour. Some male students demonstrate increasingly rude behaviour which is difficult to counter; their attitudes toward women shape those women's experience, confidence and success. A change in culture is needed to address this and should involve men taking a more active role to ensure this occurs.

Another challenge is there is a near-complete lack of portrayal of engineers in the media, and few opportunities for youth to educate themselves on the engineering profession. More positive profiling of women engineers in the profession would be helpful.

The appeal of engineering increases dramatically when branded as a 'caring' profession. While links between societal problem-solving and physics (for example) can be hard to show, offering meaningful electives and options in engineering programs helps underline these connections. Ideally, outreach activities and courses that include social impacts reinforce the message and strengthen the narrative of engineers as caring societal problem-solvers serving the public good.

Given that physics is a prerequisite for engineering programs in Ontario, the physics teachers' skill and enthusiasm is a crucial factor to getting students to enrol in and study physics to become "engineering ready". Working with Physics teachers to make the subject more relevant, interesting and inspiring is a major opportunity as well as recognizing outstanding physics teacher.

What's up in 2025

As the last exercise of the day, we took some time to create a vision of 2025 - ten years into the future. Below are some of the themes and ideas that emerged.

- There is strong representation of women across all the engineering disciplines with most disciplines close to parity and 25-30% in some of our largest programs such as mechanical, electrical and computer engineering. Engineering Education has evolved tremendously: virtual reality courses are now offered, where courses are organized into a 'choose your own adventure' format.

- All girls feel empowered and supported to do whatever they want to. No more girls saying 'I can't' or 'I'm not good at'. Amongst young people, being involved in STEM makes you cool/popular. Engineering is considered cool and girls are jumping at the chance to participate in STEM programs.

- Most engineering students have global education and internships as well as community-based learning experience. All engineers and engineering students incorporate mentorship, volunteerism and giving back in the community. Engineering is seen as the degree of choice to change the world. Engineering is considered to be the "New Liberals Arts Degree".

- Throughout K-12 grades there is a focus on STEM literacy and a clear curriculum to teach engineering at elementary and high school, with backing from the Ministry of Education. There is a focus on engineering instead of math and science, and high school courses are taught in clusters. ONWiE regularly meets with guidance counsellors to keep them updated on latest developments.