

The Insights for the Invisible Gender Bias in the Engineering Industry

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As we all know, the engineering industry is one of the most male-dominated fields around the world and the working culture within engineering might lead to the under-representation of women. Cara Berghan is a young female engineer who graduated with an engineering degree specializing in Electrical and Electronics, and she's now working in the world-class technical experts of transportation---WSP in New Zealand as a Systems Engineer. Cara shared some insights of how she conquered obstacles and overcame gender biases alongside her career path.

Childhood in the garage surrounded by engineering possibilities

Cara grew up in a family as the youngest of three; both of her two brothers and her father are in similar industries to engineering. In her childhood, Cara spent a lot of time assisting her father in the garage when he fixed their cars and utilities. Under close supervision of her father, she would help take chainsaws apart to observe the structures of it and experienced how to rebuild them. Cara was surrounded by engineering related scenarios and hence she fostered great interests for problem solving, understanding the composition of machines and assembling components in that period. Cara grew up and became a very practical and logical person, and she naturally gravitated towards a role of engineering.

The obstacles for a beginner in the engineering industry

Cara is currently working with WSP New Zealand, which is a multidisciplinary engineering consultancy company. Cara is a part of the system engineering team and enjoys understanding the full scope of how various systems integrate and fit into core

business or project functions. Cara is now assisting a project which is related to the largest transport rail project ever in New Zealand and manages the requirements of the client and ensures the design teams are meeting those requirements. Cara represents a key person to communicate among all different aspects of this project, and she loves her position as she gets to be exposed to all aspects of the engineering industry.

Cara has worked as an engineer for 4 years now, yet she wasn't always so happy about her position. When she first entered the industry, the biggest challenge she had encountered in the beginning was being influenced by management in terms of her decision making regarding her career path. When asked about her aspiration for her career, Cara felt like her decision of aiming to become a project manager was discouraged by her superior. Due to lack of experience, Cara was unsure how to confidently push back on the discouragement that she felt she received. "I felt like I was put in a box and didn't get enough exposure to the opportunities that were available," said Cara. "It's quite easy to be stuck in a path that your manager has set for you.

Cara was very fortunate that an opportunity came to her when WSP was looking for a graduate engineer with an electrical engineering background to assist with a project outside of her work experience. Cara

jumped at the opportunity as she felt like she needed to step up and demonstrate that she had the skills to be able to succeed in the role and was encouraged to think outside the box. After discovering that she was enjoying the role and doing well, Cara was forced to imagine what her future would look like if she pursued that career path. With this positive experience, her focus has now shifted to ensuring that she is achieving the goals she sets for herself. She also places the importance on receiving guidance and advice from a range of people who have your best intentions in mind to help make decisions that may affect your future. She is now on a path that she feels she can excel in and has the support of managers and her team to thrive, develop professionally and succeed in whatever she dedicates herself to.

The invisible gender bias in the industry

When asked about the potential gender stereotypes in the engineering industry, Cara shared some examples in her working experience. For instance, when Cara has a meeting where she wants to exude confidence both internally and outwardly, she puts on her “power suit” look. For Cara, a combination of a nice blazer, a pair of plain pants, and white linen shirt sends out a message of “I am a professional engineer”. She wants

to empower herself to fight against the stereotypes for women within the engineering industry with her fashion choices. “If you don’t demonstrate how confident and professional you are, people won’t take you seriously.” Cara said while referring to the needs for her “power suit” for presentation.

“There is an unspoken expectation of what you should be and shouldn’t be wearing,” Since most of the employees in Cara’s office are men, thus the expectation is mostly put on women. As a matter of a fact, Cara has bold taste for fashion, and she’s gradually trying to let her personality out in her working space through her outfit choices. “If I had to put myself on a scale with a formal engineering consultancy industry look, I am probably not on that scale with what I am wearing today.” Said Cara with a smile on her face as she was wearing a dress with leopard patterns on it. “I want to present something unique which is quite out there for an engineer’s office”. For Cara believes that what a female stands for as a professional shouldn’t be judged by her outfits but her expertise.

The uniqueness of female engineer

Cara is still in her early stage of her career yet she’s proud of herself being a female engineer. In Cara’s observation, the female

counterparts in her office are usually empathetic and willing to provide assistance. For some, Cara says, she has noticed that there can be apprehension about gender imbalance in situations such as meetings, but she insists that females bring a different perspective. Cara thinks that with the diversity of thought, action and skills of female engineer, there is huge benefits in improving gender diversity in the engineering industry.

The potential educational improvement in New Zealand

When asked about what kind of improvement could be made for the circumstance of the engineering industry from the government, Cara thinks that increasing the exposure of Science, Technology, Engineering, and Mathematics (STEM) subjects to children in early stages of education might be a potential starting point. Children in New Zealand enter the education system at around 5 years old,

and they start to learn about the potential career possibilities in school through the subjects that are taught. Cara indicated that when she was a child, all the occupation possibilities they learned about were teachers, policemen, fire fighters, doctors and lawyers. Among these occupations, certain gender biases would be fostered for children. For instance, teachers are always females and doctors are usually males.

Cara pointed out that there are two aspects that could be improved. First, the idea of having engineering as a potential career path should be introduced to children earlier. Typically children in New Zealand misconceive engineering jobs as being a mechanic or a builder, so introducing the various career paths through STEM subjects is important to broadening a child's understanding. This is pertinent for young adults beginning to consider career pathways at secondary school level, because if you've never taken courses such as math and science, you won't be able to enter the engineering



major at tertiary education even if you want to enroll. "I never knew what engineering was until I was 17." said Cara. She thinks that there should be more exposure made for careers such as engineering or architecture related jobs prior to selecting subjects that can affect tertiary entry in to certain degrees. Cara wants to encourage children and high-school students in New Zealand to learn more about engineering and female role models engaging with students to explain the work they do so that the perception of "engineering" begins to shift.

Second, Cara proposed that through education, certain gender bias from different occupations should be removed. Cara as a young female who loves math, science and problem solving, would love to have the opportunity to gain an understanding in her early stage of life that occupations such as doctors, architects, and engineers are also possible for women. Cara hopes that through early education, gender bias could be eliminated efficiently and improve the working cultural experiences for females in the engineering industry.

Building up a career in engineering

"Whatever you do, you need to do it well," said Cara while asked about the suggestion for other young women who're considering engineering as a future career. "If you have a goal, be passionate about it and give your all to pursue it. If it doesn't work, you'd know it's not for you, but give yourself an opportunity to give it a go and be passionate about it." As an independent female engineer who's now gradually building a career path in engineering, Cara also indicated the importance of balancing personal life for she loves diving, fishing, and embracing nature. "Give it your all for what you are doing, but at the same time build a life and work balance, because we can't put life on hold while we are working. We need to find a way to be the best version of ourselves at work and in our personal lives and I believe that is when we are thriving in both aspects." and this shows how she courageously pursues her career while keeping her own personality, identity and values.