



CHANGING PERCEPTIONS OF WOMEN IN SCIENCE, ENGINEERING AND TECHNOLOGY¹

Women are under-represented in the science, engineering and technology sector, but some do have very successful careers and achieve recognition as leaders in these fields. The Science, Engineering and Technology for Women (SET4W) advisory committee of the National Advisory Council on Innovation (NACI) commissioned this study to explore the perceptions, experiences and career histories of 29 such women who are regarded as role models.

The study aimed to increase the visibility of women's contributions to science, engineering and technology and to inspire girls and young women to enter these fields. The results will also feed into future policies designed to achieve gender equality in science, engineering and technology (SET).

The women interviewed for this study are at very different stages in their careers, have different backgrounds and are working in diverse fields of science, engineering and technology. They were interviewed about the obstacles they have experienced and the factors that helped them to overcome difficulties and achieve success.

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A summary of key findings from the study

Women judge their own success in two ways:

- The majority of women regard intrinsic factors indicators as important, such as being happy, stimulated and fulfilled at work, experiencing job satisfaction and reaching their own potential. For some, being accepted by peers as a scientist (regardless of race or gender) is the ultimate achievement.
- Important external indicators of success include achieving certain goals, producing successful students, achieving good NRF-ratings, being regarded as an expert, being consulted, being invited to conferences, moving into a management position and effecting change in the workplace.

The obstacles women face depends on the stage of their careers:

¹This is a summary of a 70-page report, published in October 2008, available from South Africa's National Advisory Council on Innovation (NACI).

- School girls are sometimes discouraged to take science and made to believe that they are less competent in science and maths than boys.
- At tertiary level, female students endure negative attitudes and comments from male lecturers and class mates and feel the need to compete with male students in order to prove themselves.
- Workplace challenges feature prominently during the early stages of their careers and may include issues such as:
 - A difficult transition from university to the workplace and lack of mentoring to overcome this (in contrast to the support given to men);
 - The prejudice of older men who comment on their physical abilities and suitability for certain jobs;
 - Men who expect women to take on specific roles such as taking the minutes at a meeting or making tea;
 - Male dominated environments that don't provide facilities for women;
 - Discriminatory attitudes and negative remarks about pregnancy, and needing to start over when returning from maternity leave;
 - The challenge of maintaining a work-life balance.

Women are motivated to study and excel in science and technology careers if they have:

- Family support: Both parents, but especially the father, play a key role in encouraging girls to study maths and science, by making them believe that they can succeed and instilling values such as hard work, perseverance and self-confidence that are key to performance.
- Mentors: Parents and teachers can act as mentors to help women on their way to success by providing encouragement and support.
- A stimulating academic environment and exposure to science through fairs and excursions.

Women often struggle to find a balance between their work and personal lives and make many sacrifices in order to succeed. **The following factors can help them to continue with a demanding career path:**

- A partner who supports their career and have flexible working hours so that he/she can help to juggle family and work responsibilities;
- A support structure consisting of a family, friends and colleagues to help with household duties and childcare, especially when they have to work long hours and travel;
- A supporting environment at work, and ideally flexible hours.

Women who are single or who don't have children find it easier to work long hours and travel extensively.

Having a passion for their work and experiencing personal fulfilment featured as key factors that drive successful women. Other goals that motivate them to stay in the science, engineering and technology sector include:

- A desire to contribute to solving problems;
- Wanting to make a difference to the lives of others;
- Aspiring to reach future career goals;
- Hoping to inspire young girls and women;
- Helping to transfer skills to the next generation;

- Striving for peer recognition.

Women who have succeeded in science-related careers have the following advice for those coming up the ranks:

- Believe in yourself;
- Work hard and persevere;
- Go beyond proving yourself and enjoy what you do;
- Remain focused and ignore negative, discriminatory attitudes;
- Don't allow gender issues to stand in your way;
- Regard obstacles as challenges;
- Turn challenges into opportunities to prove yourself;
- Take control of your career through networking and healthy self promotion;
- Choose a life partner that will support your career;
- Maintain a healthy balance between work and personal life;
- Make time to stay healthy and exercise.

Key recommendations from the study include:

- Promote science to young girls and build their self-confidence about their abilities in these fields while they are still at primary school.
- Acknowledge the role and importance of parents and teachers to stimulate a love of science in young girls and create opportunities for them to learn about women in science careers.
- Promote the visibility of women in science through targeted role model campaigns.
- Help women make a successful transition from the tertiary to the work environment through induction programmes that focus on negotiation and communication skills.
- Create supporting networks for women in the science, engineering and technology sector.

Role models can be a powerful tool to demonstrate the possibilities and potential of a career in science, engineering and technology to young girls. The study suggests the following in terms of role model campaigns:

- Feature hard-working, intelligent, enthusiastic, passionate, confident and motivated women that are determined to succeed.
- Show that a successful women scientist can also have a family life.
- Combat false perceptions that science is difficult and that girls are not good at maths and science.
- Encourage girls to believe that they can perform just as well as (or even better than) boys if they work hard and stay focused.