

ENCOURAGING MORE WOMEN TO BECOME ENGINEERS

March 2018

As the economy recovers, critical skills shortages are emerging in the engineering and technology sectors. Gender imbalance has been an historic issue in engineering, not just in Ireland but internationally. Women remain an untapped resource within the engineering profession.

There is a need for a much larger and more diverse workforce and it has never been more important to inspire and encourage more people, especially young women, to study engineering at third level and to choose a career in engineering.

Primary and post-primary education

Studies show that encouraging children into Science, Technology, Engineering & Maths (STEM) needs to start as young as age 5. A survey of Engineers Ireland members found that 86% of engineers believe that parents, teachers and career guidance counsellors can do more to break down the societal barriers to girls studying engineering-related subjects.

The survey also found that more than half believed that outdated attitudes, among both women and men generally, are still obstacles to women entering the engineering sector. Conscious and unconscious bias needs to be addressed among teachers, parents and indeed wider society. Training and unconscious bias workshops would be helpful.

That said, it is positive to note that the number of young women studying STEM subjects has been increasing in recent years to the extent that the majority of those taking higher level mathematics for the Junior Certificate are women. However, there is a significant gender imbalance in subjects relating to science (other than biology), technology and engineering.

Higher and further education

At third level, women constitute just 16% of engineering graduates and 12% of new entrants to engineering courses. While the figures at postgraduate level are more positive, a major gender imbalance continues to exist (Fig.1).

Furthermore, female participation in apprenticeships is extraordinarily low. Of the 11,273 State-funded apprentices, just 0.3% are women. Increasing the number of female apprentices must be a priority.

Engineers Ireland & STEPS

Encouraging women to study STEM subjects is gaining traction in policy through, for example, the National Strategy for Women & Girls and the STEM Education Review Group. Efforts to promote STEM careers are informed by research carried out by Science Foundation Ireland (SFI), Accenture and others (see overleaf).

Engineers Ireland coordinates the STEPS programme, a strategic funded partner of the SFI Discover programme and the Smart Futures initiative. STEPS aims to inspire the next generation of engineers, including by training industry volunteers to run hands-on workshops in the classroom and have career conversations with students. A disproportionate amount of our volunteers are women.

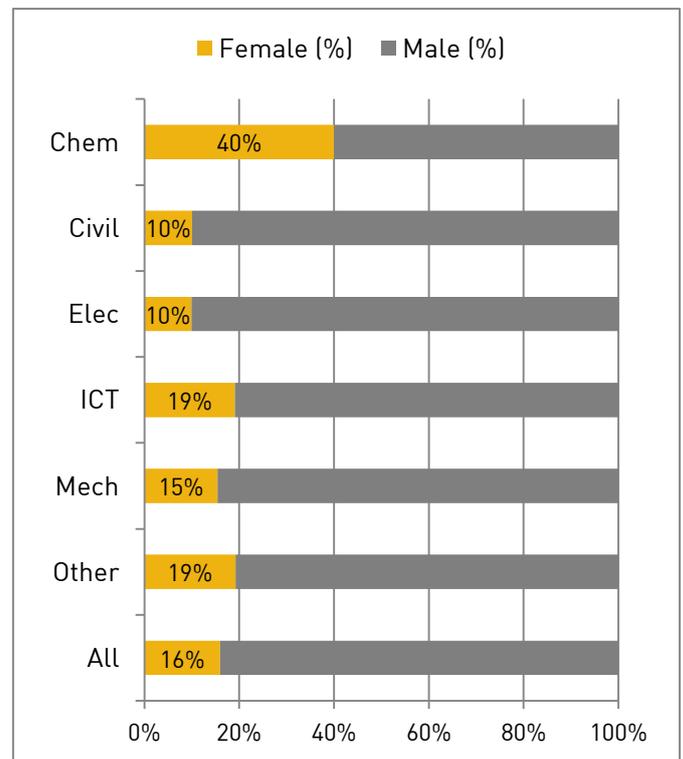


Figure 1. Gender imbalance among engineering graduates

Engineers Ireland Policy

Click [here](#) for more policy briefs on Diversity in Engineering.

Further reading

Engineers Ireland (2018)

Engineering 2018: A barometer of the profession in Ireland

Accenture (2017) Continuing to

Power Economic Growth:

Attracting more young women

into Science and Technology 3.0

Microsoft (2017) Why Europe's

girls aren't studying STEM

Department of Justice and

Equality (2017) National

Strategy for Women and Girls

Women in Technology and

Science (2016) WITS Action

Manifesto

DES (2016) STEM Education in the

Irish School System

SFI (2014) SFI Smart Futures

STEM Research

UCD EGA (2014) Towards gender

balance in engineering

Contact

Dr Richard Manton

Policy Officer

Engineers Ireland

22 Clyde Road,

Ballsbridge, Dublin 4.

+353 1 6651300

rmanton@engineersireland.ie

Engineers Ireland

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the engineering profession in

Ireland. Engineers Ireland was

established in 1835 making us

one of the oldest and largest

professional bodies in the

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Members come from every

discipline of engineering, and

range from engineering students

to fellows of the profession. For

more information, see

www.engineersireland.ie.

Key barriers to women pursuing STEM careers

Accenture has produced three reports on attracting more young women into science and technology, based on quantitative and qualitative research with thousands of students, teachers and parents.

The reports identified the key barriers to encouraging women to pursue STEM careers as:

- Negative stereotypes towards STEM subjects and careers
- Fragmented information about STEM career paths
- A lack of information for parents
- A disconnection between industry's skills needs and girls' choices for Leaving Certificate subjects

The reports' main recommendations are:

- Intervention at an early age to alleviate negative perceptions of STEM
- Help parents to educate themselves about STEM subjects
- Describe STEM careers by using more specific job roles to enable children to envisage the kind of work they will do
- Deliver a consistent and sustained message across industry, education and Government

In the workplace

Less than 25% of the 120,000+ people working in STEM-related professions in Ireland are women. Many female engineers have serious concerns regarding promotion to senior levels and pay; for example, male engineers are almost twice as likely to work in senior management compared to female engineers.

Men and women need to be given the same opportunities. Companies must ensure they are encouraging both women and men to step forward for opportunities and provide a clear career development path for all of their employees, including membership of company boards.

A core component of increasing the number of female engineers will be to improve working conditions for both men and women currently in the industry. Engineering workplaces should be inclusive, encouraged to institute family-friendly policies where possible on childcare, leave and flexible working packages. These policies can be highlighted as company attractions.

Women in Technology and Science (WITS) is a membership organisation supporting women in STEM. WITS has set out a four-part action manifesto to improve gender balance in STEM and to encourage women to consider STEM careers:

- Advance women's leadership and participation in decision making – locally and nationally
- End the gender pay gap and deliver equal opportunities for women
- Promote family-friendly STEM workplaces and manage work-life balance
- Strengthen social protection, training and employment supports

The implementation of these actions would go a long way to attracting and retaining female engineers – these are vital role models for young women who may be considering a career in engineering.