



## Women in Technology and Science

### WITS Women and Technology and Science Policy Calls 2020

**Founded in 1990, WITS is a national, independent voluntary organisation representing women studying and working in science, technology, engineering and mathematics (STEM) in Ireland. WITS is a member of the NWC and the Wheel.**

**WITS Vision:** A society where women have equal opportunities, experiences & recognition in STEM.

**Our Values:** Fair play, Evidence-informed, Generosity, Progress-driven

**Our Mission:** A voluntary, independent organisation advocating, acting and connecting for women to benefit society as full and vital participants in STEM

**Our Goal:** To grow our profile and membership and collaborate with like-minded organisations to progress our mission of advocating, acting and connecting to have women as full participants in STEM

#### **Equality of opportunity in the STEM workplace**

Equality matters, not just at the ethical level. [PWC](#) have estimated that Ireland's GDP could be \$60 billion higher if we had the same percentage of women in work as Sweden. That's a lot of schools and hospitals.

STEM jobs tend to be better paid than more female-dominated sectors, and without closing the gender gap in STEM it's unlikely that the gender pay gap will be closed. In Ireland, the [average gross hourly earnings for a woman are 13.9% lower than a man's](#). And that's before taking into account that women are more likely to work part-time than men. So why aren't women taking up these interesting, skilled and well-paid jobs? Only a quarter of Ireland's STEM workers are women. Before we congratulate ourselves too much on our modern, gender-equal society, it's worth remembering that [Ireland has the lowest percentage of female graduates in engineering, manufacturing and construction in the EU](#).

The government's National Strategy for Women and Girls 2017-2010 includes actions to reduce the gender pay gap but no targets to help focus efforts.

Apart from the challenges facing all workers with caring responsibilities, women in STEM still don't have the same opportunities in education or the workplace as men.

In the workplace, the leaky pipeline in STEM affects digital skills (amongst other things) of workforce. In research conducted in 2012 in Scotland, women working in STEM jobs were found to be 50% more likely to drop out of STEM jobs than men. The Department of Education and Skills and SOLAS are working on attracting women into STEM careers but it is just as important to keep them there.

**WITS would like to see an action group set up and funded by the Department of Justice and Equality to target the leaky pipeline in STEM.**

#### **Equality of opportunity in vocational and third level education**

The majority of spending on active labour market policies like the Rural Social Scheme, JobsPlus, Springboard and apprenticeships goes to men. And "majority" here means anything between 67% and 99%. While Solas have been increasing the number of female apprentices over the past few years, [only 2% of 2018's crop of apprentices](#) were women. While women are still under-represented in the workforce, it seems retrograde to focus spending on these interventions on men.



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In academia, post-doctoral researchers have little job security as they are often on rolling short-term contracts. For women, this can mean limited opportunities for maternity leave cover just at the life-stage where having children is a consideration. While the Irish Research Council post-doctoral fellowships and European Research Council starting grants allow for maternity and paternity leave, this is not true of all post-doctoral contracts. Even when leave is available, there is often a stigma associated with taking it. Doctoral students are also susceptible to this pressure as they too are not guaranteed leave or deferral of grants for family leave. **WITS calls on the Department of Education and Skills to ensure publicly funded 3<sup>rd</sup> level institutions include maternity, paternity, adoption and other family leave as eligible leave for post-doctoral contracts, and to ensure that doctoral students also have access to leave during their research.**

The tipping point for women choosing whether to stay in STEM research often occurs at post-doctoral level where the proportions of women in academic positions starts to roll off, reducing the number of female role models. Women who have taken maternity leave tend to have fewer publications than their male peers. Both issues contribute to make post-doctoral level a time when women are particularly likely to exit their academic careers. **WITS welcomes funding for the 45 [Senior Academic Leadership Initiative](#) professorships to address the fact that only 1% of full professorships are held by women. It also welcomes the funding for third-level initiatives on [Ending Sexual violence and Harassment in third level Education \(ESHTE\)](#).**

### Equality of opportunity in second level education

According to Eurostat, [Ireland's public spending on education as a % of GDP](#) was the third lowest of the EU28 countries reporting data (3.77% vs 5.02% in 2015), and according to the World Bank this percentage has been falling since 2008. [Budget 2020](#) allocates €11.1 billion to the DES and rightly points out that this is €2 billion higher than in 2015, but page 66 (it's a long report) of the [Trends in Public Expenditure Report, Spending Review 2019](#) from the Department of Public Expenditure & Reform points out that enrolments at all levels of education have increased far beyond expenditure from 2008 to 2018.

So we would call for a reversal of this trend, with funding directed at:

- **improving access to and uptake of gender-segregated subjects for girls at second level**, where according to the CSO:

- 48% of 2018 Junior Certificate Science candidates were girls but at Leaving Certificate level, girls are over-represented in Biology and under-represented in Physics
- 20% of schools don't even offer Physics at Leaving Certificate level
- 9 girls sat Leaving Cert Biology for every 1 who sat Physics in 2018
- 5 boys study Leaving Certificate Physics for every 2 girls
- In Biology, the ratio is 3 girls for every 2 boys.
- The [National STEM Education Policy Statement 2017-2026](#) has a target of a 40% increase in the uptake of STEM subjects by females, but in the most gender-skewed subjects like Technology, that's just 108 more girls taking the subject over a 9 year period. In Physics it's 88 more girls every year across the country.



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- Supporting teachers can also access to gender-segregated subjects. [Improving Gender Balance in Ireland](#) is a three-year national collaborative project led by CASTeL at Dublin City University, in partnership with the [Institute of Physics](#) and Science Foundation Ireland to support physics teachers in 7 second-level schools.
- **WITS calls on the DES to set more ambitious targets for uptake by girls of the most gender-skewed subjects including Technology, Engineering, Physics and Applied Mathematics.**

### - highlighting STEM role models particularly for girls

- “You can’t be what you can’t see”. According to [Microsoft research](#), on average, across Europe, 41 percent of girls with role models report an interest in STEM subjects, compared to 26 percent of girls without a role model.
- To tackle the stereotypes of 'female' and 'male' roles in the sciences, WITS is planning a campaign for 2020 which specifically targets the "pSTEM" areas, otherwise known as the mathematics-based subjects such as Physics, Engineering, Mathematics and Computer Science. In this campaign we intend to highlight positive female role models across each of these four fields, both in academia and industry, through a series of short video interviews. WITS has applied for SFI Discover funding to help finance the campaign.

### - campaigns to recruit more physics and other pSTEM teachers

- 1/6 of Ireland’s science teachers registered with the Teacher’s Council of Ireland are physics specialists where it should be closer to 1/3 of the three science disciplines of physics, chemistry and biology.
- Only 30-40 physics teachers join the profession every year
- England has reversed the downward trend in the numbers of physics teachers joining the profession from around 200 in 2001 to 920 in 2012, and a consequent 1/3 increase in the numbers taking Physics A level. This was achieved with the help of the [Institute of Physics](#) by a combination of marketing, financial incentives, new routes into teaching, targets for teacher training, and upskilling the chemistry and biology specialists teaching physics currently.
  - Marketing targeted potential teachers with advertising and teacher recruitment events with the support of the IoP in university physics departments.
  - A [government-funded physics scholarship scheme](#) currently disburses £28,000 per head to 140 physics trainees.
  - Six-month conversion courses undertaken before a student embarks on a one-year postgraduate teacher training course contributed up to 200 additional physics teachers a year, often mature students.
  - Setting target numbers for biology, chemistry and physics for post-graduate initial teacher education courses to correct historic imbalances which had favoured biology saw physics numbers again shoot up.
- **WITS calls on the DES to set targets to increase the number of physics teachers and the number of schools offering physics through learning from proven international strategies.**



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### **Childcare and family leave**

As a member of the NWCI, WITS supports [its prebudget submission](#) welcoming the introduction and extension of parental, paternity and carers' leave, and calling for their extension to 4 months' paid parental leave, 1 month of paid paternity leave and 6 paid days' of paid carers' leave.

***See [witsireland.com](http://witsireland.com), email [info@witsireland.com](mailto:info@witsireland.com) or follow [@WITSireland](#) for information, events, and resources.***