

Introduction

In this work we present the current situation regarding the representation of women in physics education at both secondary and tertiary level in the Republic of Ireland. We include statistics for teaching/research staff and student numbers.

Our findings show that the proportion of girls taking physics at high school level represents less than 4% of all students despite the fact that female physics teachers represent an increasing percentage. Within third level the situation is also grim, with some institutes reporting less than 7% female participation in physics-based courses.

We also present Institute of Physics findings on the female percentages at the different academic career levels for some of the major third level institutes in Ireland. These show that women are under-represented at all levels.

We report on a number of initiatives that have been launched by Science Foundation Ireland under their Women in Science and Engineering programme which aim to address the lack of female graduates in the Science, Engineering and Technology sector and encourage qualified women back into the academic arena.

Second Level Education

Teachers:

- 850 physics teachers among 850 schools, of which 40% female.
- In pre-service training courses about 85% are female.

Students:

- ~55,000 students sit the Irish Leaving Certificate (pre-university exam).
- 15% of all Leaving Certificate students take physics.
- 24% of Leaving Certificate physics students are female (~ 2000 students).
- Girls represent 15% of students taking the Ordinary level.
- Girls represent 30% of students taking the Higher level.

Why don't girls study physics?

- Lack of role models and negative view of "nerdy" male physicists.
- No encouragement from parents and teachers – girls take *soft* options.

Third Level Education

Student profile in undergraduate physics denominated degrees (Fig. 1)

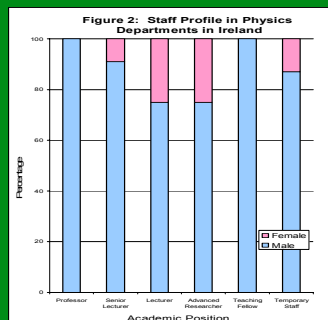
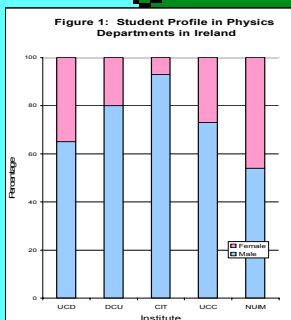
- University College Dublin: 35% female
- Dublin City University: 20% female
- Cork Institute of Technology: 7% female
- University College Cork: 27% female
- National University of Ireland Maynooth: 46% female

Female numbers within the technology sector are extremely low. Note that this data does not represent all physics-based courses in Ireland.

Staff profile in physics departments (Fig. 2)

The results of a survey of 103 staff in Third Level Institutions in Ireland is presented in Figure 2.

In total 13% of staff are female, representing 12% in Experimental Physics and 1% in Theoretical Physics. Women are significantly under-represented in more senior positions.



Research

Science Foundation Ireland is the main research funding agency in Ireland and prioritises research in BioTech and ICT. SFI also manages the Research Frontiers Programme (RFP) across all science and engineering disciplines.

In Spring 2005 SFI produced a booklet profiling the 41 women whom they had already funded. Women represent 11% of all applicants to SFI but only 9% of successful applicants. In the ICT division, female representation drops significantly. SFI now funds 63 women.

Statistics have been compiled for some SFI programmes to determine the status of women versus men:

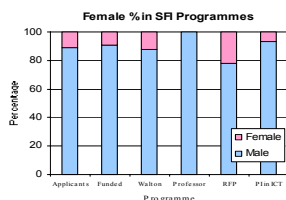
RFP04 and RFP05 > 20% support for women across all disciplines. However, only 2 out of the ~ 271 projects funded are for women in physics departments. This year female applicants had a 15% success rate, similar to that of their male colleagues. Women in physics had a 0% success rate.

Walton Fellowship BioTech/ICT (2002-2003): 2 women out of 22 awards, both in ICT.

Research Professor BioTech/ICT (2001-2003): No women funded out of 17 awards.

Principal Investigator ICT(2001-2004): 4 out of 55 awards to women i.e. 7% of PIs with an equal share of the ICT budget.

Women are significantly under-represented in the more prestigious awards e.g. Principal Investigator and Research Professor compared to the RFP.



Future Initiatives

"The EU member states have committed to increasing their R&D spend to 3% of GDP by 2010. In Ireland... need to recruit 12,000 additional researchers. Women represent a significant labour resource from which many of these additional researchers can be recruited," Minister Micheál Martin, April 2005.

SFI Initiatives

SFI seeks to address the imbalance of women in Science, Engineering and Technology through three programmes:

Principal Investigator Career Advancement Award – aimed at academics who have interrupted their career for maternity, adoptive, carers or parental leave.

Institute Development Award – aims to provide higher education institutes with the opportunity to enhance the participation of women in science and engineering research activities and research management.

Junior Scholarship – aims to identify and encourage more high achieving girls into third level education and to support them during their undergraduate career.

Success of programmes will be determined over next years and depends on attitudes within the 3rd level sector.

Institute of Physics Initiative

Aims to provide scholarships for first year physics students.