

## Tackling recruitment and employment

### Creating opportunities for career migration

Alternatives to the traditional pathways from education to initial employment have always been important in the development of women's careers. Some firms have attempted to formalise the process of career migration through the development of springboard courses that enable some women to move more quickly to a senior and/or professional role in ITEC. The experiences of employers involved in such schemes could be more widely shared to create further opportunities for women to advance in ITEC.

### Overcoming barriers to entry into the culture of employment in ITEC

Some consider ITEC still to be unwelcoming to women and the terms and conditions of work (including long hours, travel, lack of part-time work) not 'female-friendly'. As seen in the UK skilled women invariably come up against low status and unequal pay. Because of the tendency for young male ITEC managers to recruit in their own image, age also sits alongside gender in discriminating against women. Firms need to review their recruitment practices and selection criteria, their language and the images portrayed to ensure they do not discriminate against women directly or indirectly.

## Tackling employment and retention

### Enabling progression and achieving retention in ITEC careers

Women and girls do have the skills necessary to progress in ITEC employment. Yet few women achieve high status positions in ITEC occupations. There are certain ways that women can help themselves. Women have a responsibility to make sure that they are not overlooked in employment. However, their confidence and perceptions of their abilities are typically low and do not adequately reflect their competence. Firms have developed a number of initiatives aimed at retaining women in ITEC occupations, for example, the provision of financial and management support for flexible working and workplace diversity. However, statistics show that too few women are employed on a non-standard part-time basis in the UK compared to the US – there is clearly more that can be done in this respect.

### Entrenching the new image of ITEC employment

The ability of the firms to value, recruit, promote and retain women with skills in appropriate ITEC occupations is critical to retaining their employment in ITEC. This involves changing the culture of ITEC employment and management.

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**Women and  
Equality Unit**

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Department of Trade and Industry

# Women in ITEC Courses and Careers

## Executive Summary

### Introduction

This report represents the first systematic review and analysis of the participation of women in Information Technology, Electronics and Communications (ITEC)-related courses and careers internationally. It has been undertaken on behalf of the Department for Education and Skills (DfES), the Department for Trade and Industry (DTI) and the Women's Unit in the Cabinet Office. The project focuses on six countries: the UK, the US, Canada, Ireland, Taiwan and Spain. It draws on an evidence base of empirical data, literature and insights from interviews with key informants<sup>1</sup> in the selected countries.

The aims of this project are to:

- provide a comprehensive analysis of the position of women in ITEC-related courses,<sup>2</sup> that are expected to lead to a career in ITEC, within the ITEC sector<sup>3</sup> or ITEC jobs<sup>4</sup> more widely
- compare and contrast patterns in the participation of women in the UK with those in other countries
- identify lessons for education and employment policy and practice that can be learned from experiences abroad and which might improve the situation for women in the UK.

The research has provided copious evidence that in all countries there is a disparity between the participation and position of men and women in ITEC-related courses and careers. It is, therefore, not just a UK problem. Further it shows that the gender gap is much wider than it should be given the relative proportions of men and women in the graduate population and in the workforce as a whole.

### The participation of women in ITEC-related courses

Women are generally under-represented among graduates in ITEC-related subjects and that is despite the fact that they form the majority, and a growing proportion, of university graduates generally. ITEC-related courses are not the only route into ITEC jobs but the currently low levels of participation are unlikely to enhance women's employment in ITEC, especially in the more technical areas such as product design and software development. The proportion of women ITEC graduates is lower in the UK than in the other five countries.

Some women appear to move away from ITEC as they structure their education towards a career. In the UK this starts before entry into higher education. Although similar proportions of males and females study ITEC-related subjects at school, smaller proportions of women qualify at GCE A Level.

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1 These included ITEC experts, employer representatives and members of industry specific professional bodies.

2 Defined to include Computer Science, Mathematical Science, Engineering and Technology and Business and Administrative Studies. See Appendix 1 of the main report for a more complete definition.

3 The definition of the ITEC sector is based on Hawkins, Mansell and Steinmueller's framework (Hawkins et al., 1997). This includes IT services, telecommunications, electronics manufacturing and broadcasting services.

4 ITEC jobs involve the design and production of ITEC goods and services, for example, computer managers, electrical and electronic engineers and technicians, software engineers and computer analysts and programmers. These exist within or outside the ITEC sector.

There are more problems in the UK in attracting women onto ITEC-related courses such as computing, engineering and maths than courses in business and administration. Women represent a high and growing proportion of graduates in business and administration in all countries. The proportion graduating in engineering is beginning to rise in many countries but it remains stable in the UK where it is lower than in Canada, the US and Spain. Female computing graduates are in decline in all countries, with figures for the UK lower than for Ireland and the US. There are higher and rising proportions of female graduates in maths in the US, Canada and Taiwan but proportions in the UK are low and declining.

## The participation of women in ITEC careers

Women are also severely under-represented in ITEC jobs in all countries and their participation in recent years has been decreasing across the whole sample. In the UK in 2000 only 13 per cent of women were working in ITEC jobs across the whole economy, down from 16 per cent in 1999. This is much lower than in the US, Canada and Ireland. Women's employment in ITEC sub-sectors in the UK is skewed towards broadcasting services. They are very poorly represented in IT services, telecommunication services and electronics manufacturing. The US, Canada and Ireland perform better in electronics manufacturing and IT services.

There are more opportunities for part time work in the US than in the UK. The proportions of men and women working part time are more similar in the US than the UK. This may be having a more positive impact on the acceptance of more flexible forms of working in the US than in the UK. Women in ITEC jobs are on average 4 years younger than men so age may also be discriminating against women in ITEC employment in the UK who delay entry into an ITEC career for example because of care for children and/or dependants.

Women may also be having more problems advancing once in employment and/or securing more professional, higher level jobs. Women in the US and the UK are concentrated in lower level ITEC jobs such as telephone operators or data processing equipment installers and repairers, jobs that typically receive lower pay. Men are also better rewarded for their work in ITEC than women in the same jobs. This differential appears to increase with occupation status in the UK and with experience in the US.

## Encouraging greater participation and overcoming barriers – the lessons

### Tackling access and education

#### Building ITEC capabilities among girls and women

Negative attitudes to ITEC are formed early in life through experiences in the home and at school and through the media. They limit girls' and women's 'psychological access' to ITEC, and reduce their inclination to engage with technology in order to develop ITEC capabilities. In the UK, girls tend to disengage with ITEC subjects at school after GCSE level. A large disparity develops between males and females in subject choices in further education. Counteracting the impact of these influences on women has been the key to successful initiatives, for example, in Canada, that have increased the propensity for women to engage with ITEC. Key features of these initiatives have been:

- the development of ITEC capabilities among teachers, especially female teachers
- the creation of privileged spaces for girls to interact with technology at school
- sensitivity to the gender implications of instructional material, including on-line teaching resources.

## Tackling education and recruitment

### Refining the image of an ITEC career

The masculine image of ITEC and ITEC occupations is a deterrent to women. However, many feel the image of ITEC employment does not reflect the reality and the diversity of ITEC work in modern society. Refreshing this image in order to promote the benefits of specific ITEC careers and/or studying ITEC courses (e.g. increased employability) is the key to encouraging greater numbers of women to build their educational profiles towards participation in ITEC employment.

### Raising awareness of pathways into ITEC jobs

Information needs to be provided to girls and women about the routes into ITEC careers and the job requirements other than just having an ITEC-related qualification. Practical initiatives have been developed abroad to make women better informed and these are having a positive influence on women selecting an ITEC career. Such initiatives include:

- publicity and marketing drives
- initiatives to change the structure and content of ITEC courses
- the establishment of closer relationships between education and industry
- efforts to integrate women and girls into the community of professional/education practice in ITEC.

The Women's Television Network in Canada, for example, has developed a portfolio of approaches to employment and capability building that are available to girls and women at various ages/stages in their professional broadcasting careers.

### Creating opportunities for skill conversion

The availability of opportunities for women to upgrade their initial skills is important when so many women leave education with few ITEC-related skills. This is not simply because education and/or training in an ITEC-related subject might lead on to an ITEC career. Improving ITEC literacy more generally will also clearly have wider social and employment benefits in an increasingly knowledge-based economy. The availability of multidisciplinary (joint) courses that include an ITEC-related subject (e.g. in Ireland) have been important in enabling women to engage with ITEC while pursuing other, more familiar course options. These courses have introduced elements of other disciplines into pure ITEC courses. Similar modifications to courses within the UK may also serve to strengthen education and business links, and generally improve the skills leading to an ITEC career in this country. Conversion courses that enable students to migrate from a non-ITEC first degree into ITEC have also been instrumental in Canada and Ireland in increasing the participation of women in ITEC employment. There may be lessons here too for the UK.

### Creating multiple points of access to ITEC literacy

Limited opportunities for developing ITEC skills and cost constraints are barriers to women's participation. Widening opportunities for girls and women in all age groups to access ITEC technologies (including the Internet) in the home and elsewhere in the community, will provide women with important ITEC skills and also enable women in ITEC jobs to refresh and upgrade their capabilities. As firms adapt their recruitment activities to an on-line environment, access to ITEC technology is vital to identify opportunities for employment. The range of training provision is also increasing (e.g. basic computer literacy certification or professional vendor qualifications). It is important that women are made aware of all opportunities and can gain access to wider forms of skill development.