Conference Presentation

Woman and information technology: are good practices really « good » at attracting female students in the IT workplace?

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Abstract

Among the technical and scientific studies, the evolution of the computer sciences draws attention. From the 1980s, in France, more and more men have chosen this field but in the same time, the number of women has remained the same. By studying computer scientists’ discourses and questionnaires completed by first-year science students, we observe the computer scientists’ image has changed in the past 30 years. Before the micro-computer, ICT jobs were service industry scientific jobs. They were quite attractive to female scientists.

Reference


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Among the technical and scientific studies, the evolution of the computer sciences draws attention. From the 1980s, in France, more and more men have chosen this field but in the same time, the number of women has remained the same. By studying computer scientists’ discourses and questionnaires completed by first-year science students, we observe the computer scientists’ image has changed in the past 30 years. Before the micro-computer, ICT jobs were service industry scientific jobs. They were quite attractive to female scientists. Then, the representation of the computer scientist sticks on a man solely enthralled by his computer (Collet, 2006). However, computer scientists have many motivations and interests which have led them to choose this career. Unfortunately, women have difficulty in finding their place because of the stereotype pregnancy. Moreover, in opposition to men, female students often choose this career thanks to their representation of their future job which is in touch with the reality of the workplace. But only few of them find the way. Once on the job market, they endure an active discrimination from some colleagues or managers and gain few supports, even from other women. In France, women network, especially in STIM are still at their beginings. Finally, many of them quit IT, the others make a carrier in non strategic activities areas, like technical documentation or training. In such areas, they soon meet the glass ceiling.

Recently, an OECD report (OEDC, 2006) has drawn attention to the declining interest in science and technology studies amongst young people. Because of the gender gap in ICT amongst professionals as well as academics, one recommendation is to promote equal opportunity for male and female students. However, in order to reverse the trend of declining interest in ICT, the causes of this phenomenon should be studied. Why and how should women be attracted to studies that men prefer to ignore? Our research starting point is the persistent male image of technology (Wajcman, 2000), especially in IT, the “geek image”, which affects the choice of studies (Marry, 2004).

For many years, various campaigns have been initiated to attract more women in ICT professions. Why is their success apparently so limited ? WWW-ict was an European project (Information Society Technologies, 5th Framework Programme) hinges on the development of an integrated approach to the different aspects of gender disparity in the ICT professions (Valenduc et al., 2004). It combined explanatory factors linked to
education and training, with the conditions of work and employment, and with the technical and professional culture of ICT.

The following pattern was designed to described the imbrication of these factors:

Explicative variables: social and institutional arrangements, cultural background (Valenduc, et al., 2004) p.35

In this study, fifty-nine practices have been collected, aiming at improving women’s place in ICT professions were collected in seven countries: Austria, Belgium, France, Germany, Italy, Switzerland and UK during an European rechearch “Widening women’s work in ICT”, supervised by The Fondation Travail / Université of Namur (Belgium). The French part of the study was conducted by The Agence national pour l’amélioration des conditions de travail (ANACT).

The empirical data collected by each project partner in his/her country was not designed to be exhaustive. It was firstly to show the various ranges of initiatives that
had been taken in the chosen countries with regards to women and ICT with a view
to bridging both gaps in gender and skills in the labour market for ICT-related
professions. The initiatives were thus selected as illustrative or comparative
elements (the widely implemented ones) and sometimes as innovative and
exemplary ones. Another selection criterion is their visibility and viability.

**Good practices**

The proposed definition of what is a “good” practice is borrowed from the glossary
compiled by the BEEP project (Best e-Europe practices, also an IST project under
FP5). Following BEEP, a good practice is “the use of a method, tool, technology etc.
which is generally regarded as ‘practices which are good for learning’, i.e. practices
which either achieve their own objectives and/or have a beneficial impact on their
environment, or (and more importantly) provide useful learning experiences which
are likely to stimulate creativity, ingenuity and self reflexivity on the part of the user”¹.

- **34** practices aimed at learning periods, including:
  - school and higher education
  - adult training (job-seekers or professional training)
  - school or career guidance
- **31** practices aiming to change the professional world
  - arrangement of working hours
  - management of staff aiming to break the glass ceiling or pay difference
  - networking inside or outside companies…
- **5** practices aimed at personal life, familiarisation with home computing,
  Internet use.

**Target groups**

This observation leads us to create two categories:

- Women: category which covers adults, young women and girls
- Potential change actors: category covering employers (HR, employing
  organisation, etc.), school or professional guidance centres, schools
  (administration), teachers, family and the media. These audiences act in very
different areas and for very different reasons. Nonetheless, they are all
facilitators for bringing or keeping women in ICT.

Globally, out of the 105 responses relating to the target audience (still out of our 59
practices), 60% are geared towards Women and 40% to Potential change actors.

It appears that too often, the policies address only women, neglecting other agents of
change. Their messages concerning job content and careers are too vague (Collet et
D’Ouville 2004). And they often focus on only one of the causes of the gender gap in
ICT professions: either education or working conditions or professional culture. The
practices appear to be rather biased towards changing/adapting women to fit within
existing systems rather than looking to understanding different workplace systems
and cultures and to see where these systems include good inclusion strategies as
one part of a broader good practice culture, interesting women but also non “geek”
men.

¹ [http://www.beep-eu.org/Content/Glossary/GlossaryV5.htm#GoodPractice](http://www.beep-eu.org/Content/Glossary/GlossaryV5.htm#GoodPractice)
Theoretically, we can consider there to be two types of approach to favour the entry of women into ICT professions: removing obstacles or Shifting representations.

**Removing obstacles**

Initially, we can act on the objective components of the profession, as we believe that if women are turning away from IT, it is because they are encountering solid obstacles in their path. We know that girls are more likely than boys to anticipate their professional life during school and career orientation, and in particular, young girls choose industries that will enable them to live a life that meets their aspirations. The reasons may be varied: raising a family, of course, but also, travelling, or taking up challenges. However, the problem of articulating their personal, family and working lives is ever present in the minds of many young women.

Given the clear obstacles that women meet during their studies and in the professional world, we can assume that a good practice is one that aims to correct, counterbalance or even remove these hindrances while strengthening the driving forces that are objectively favourable to women.

This essentially covers:

- Training aimed at women, often in a single-gender environment, in order to enable them to access courses that they might not have dared approach. Coaching or tutoring, which offers women advice or support to confront problems that they encounter in ICT (and discrimination in particular).
- Networking, as women are more isolated than men in the profession, not only because they are rare (women sometimes feel isolated because they do not have the same interests as their male colleagues), but above all because they have little time outside their working hours to build professional relationships.
- Improvements in working conditions in order to make family and professional life easier to reconcile (flexible working hours, part-time, possibility of working from home, crèche in the workplace or training centre).
- The desire to smash the glass ceiling and have a non-discriminatory personnel management policy, particularly in terms of salary and promotion.
- Grants to help young women in their studies, allowances for university research, projects, and organisations working to improve women's access to ICT.

**Shifting representations**

Secondly, we can choose to work on representations, to consider that if women are not embarking on studies leading to ICT jobs, or if they do not remain in these jobs once they are in, it is because:

- the image they have of computer scientists does not match the image they have of themselves.
- they are viewed by their colleagues and superiors via sexist stereotypes: they are assumed to be unsuited to the profession.

All in all, whatever way we view this image problem, we are facing a representation of the profession compared with the reality of the profession, the representation of womankind compared to the reality of women today.
The consequence of this distortion is that when an obstacle – a real one this time – arises, it is felt to be insurmountable because it seems to reinforce such images and anchor them in reality. There are two examples that support this reasoning:

- The ICT profession is reputed to be difficult to reconcile with family life – long hours, meetings at any time of day or night, travel, etc. However, other jobs such as nursing or cleaning are hardly compatible with family life, either. The arrangements or adjustments that women working in these professions are forced to make are considered normal, not only by women, but also by employers, colleagues and partners, as both jobs are traditionally done by women. ICT professions are considered as male domains, and the slightest unforeseen issue simply confirms the idea that they are not compatible with family life and are unsuitable for women. Employers are reluctant to make special arrangements, partners are not always understanding or tolerant, and women feel guilty for selfishly sacrificing their family over a career that is not designed for mothers. But in fact, it is because the profession is deemed to be a male one that it is hard to articulate it with family life, and not the other way around.

- Women are traditionally suspected of incompetence or, rather, of being less technically competent than men. Men do not generally have an openly hostile attitude to women; it is more an unspoken lack of trust, the expectation that the woman will make a mistake – which she inevitably does at some point, thus confirming the sexist suspicions. Moreover, during her career, a woman will have the opportunity to meet colleagues (men or, indeed, women) who will openly question her competence, refuse to work with her or recognise her as a superior, eventually sowing doubt within the company. This attitude may end up destroying the somewhat fragile self-confidence that women have built up, placing them in a situation of failure or impotence. Overall, it is as though the confidence of women in the IT workplace were a balloon that is pierced with tiny holes every day until it deflates completely. It is not because women lack skill that they have trouble asserting themselves: it is because when they are seen as incompetent, they begin to experience self-doubt.

The practices aiming to modify representations will work on:

- the image that women have of the ICT professions, by presenting positive identification models (advertising campaigns, non-sexist job presentations, and also tutoring), and by showing that these professions are far more varied than women imagine.

- the image that employers have of women and the profession, by introducing them to competent women who have obtained good qualifications, showing them that the range of skills brought by women can be highly useful to companies.

- self-confidence, with coaching practices

Although these two approaches may seem contradictory, they are in fact quite complementary:

- If the representations of employers and women do not change, women will not be attracted to these jobs and employers will not come looking for them.

- If we are satisfied with simply changing representations, women will quickly be confronted with obstacles that will reactivate them again.
What aims? What targets?

The chart, p. 2 shows how the factors that explain the gender gap in ICT work systemically. One of these spheres would not, on its own, suffice to explain the gap: it is the interaction of factors that creates the current situation.

Similarly, even when tackling this gender gap, it is pointless to try and address only one sphere. Why try and convince employers to hire women if few women are actually opting to study IT? How can we persuade girls that there are interesting careers in ICT if they are to quickly hit the glass ceiling and realise that their salaries are significantly lower than those of their male counterparts? In both cases, the effects of Good Practices would be fleeting, and limited.

This diagram shows a five-headed monster: each part must all be targeted if the monster is to be killed. When an employer decides to increase the number of women on the staff, then there must be well trained, self-assured women on the job market. If such women are to exist, then they must feel sure that there is a place for them in this profession, via the media, and educational and career guidance. And if this fragile balance is to last, then the people surrounding these women (colleagues, managers, and partners) must consider them to have a legitimate place.

Equal opportunities between men and women in ICT will work as an emerging phenomenon, based on an effective, balanced system of Good Practices, working together on multiple causes, to achieve a common goal.

Recommendations

The first outcome of our empirical research is that there is no sufficient and shared information on the actual content of ICT professions. As it comes out from the empirical evidence, ICT professions, especially in their more recent developments (e-publishing, multimedia), consist of different contents: from technical strongly math and science-based contents (engineering, physics, chemical, biology), through economic, marketing and management matters, to arts, communication and linguistic subjects.

As a consequence, speaking of one “privileged” road and curriculum to ICT occupations induces in most of the cases rather a distortion. Having a strong inclination to math and technical science is not a condition sine qua non for entering ICT field, although it is often the major entrance route. According to the project findings, it is essential to encourage the circulation of information on diverse career opportunities and diverse skills and job content of ICT professions. Vocational advisors, counsellors, head hunters and human resources managers, but also parents, teachers and students are likely to be the main agents of these kind of initiatives.

One of the unexpected results, emerging especially from biographical interviews, is that quite a number of careers in ICT are undertaken “by chance”, i.e. due to random or unpredicted events. There are cases of women:

- coming from different fields of work into an ICT job (often just thanks to informal ICT training);
- having different kind of degrees and curricula, also not technical ones, when they entered ICT occupations;
- entering ICT jobs attracted by the opportunity to learn new things.
Computing and other skills linked to ICT have sometimes come out to be a good solution to overcome crisis and break in professional life. We even found in some cases that having picked up ICT is useful for reinsertion after unemployment and maternity breaks. As a consequence:

- Vocational advisors, counselling institution should contribute to women’s awareness of possible connection between their degrees/profiles and ICT jobs.

Improving initiative aimed at re-orienting, re-inserting and re-training, by means of ICT “generalist” degrees and graduations (arts, human sciences, journalism) to make them more suited to new economy. Retraining opportunity might be especially realised by improving the secretariat profiles to maintenance and support ICT skills; the artistic and journalistic profiles changed into web profiles.

For example:

the Belgian good practice “Interface 3”; the Italian project “intellectual unemployment” aiming at training tutors on-line, web masters and content manager profiles; Austrian “WebAcademy”.

- Social partners (unionists, employers associations, companies) and institutions should promote retraining courses, or tutorship for women after unemployment or maternity, in order to support re-insertion career in ICT jobs without high technical requirement.

Examples of two interesting practices in Austria: the first organised by Microsoft, Siemens and Manpower, called “EDP-Academy for women”, the second is the “Thelm@ project” offering courses in ICT and telecommunication addressing women in a region of high unemployment rates).

The research confirms that one of the main feature of ICT sector and profession is the need for continuing training due to the rapid changes in scientific and technological matters. Notwithstanding this constitutive feature, formal and institutionalised continuing training inside the companies is an exception more than a rule (companies tend not to invest on training also on account of the high turnover of the personnel).

In most of the cases, updating his/her own skills is completely up to the individual. Moreover, providing ICT training courses addressing women results an attractive career perspective for some of the informants.

As for self-training opportunities, according to our data, we must underline the importance of the team and of informal network (either inside the company or on web) as a major place for self-training, exchanging competencies and experiences and enhancing ICT skills. On the opposite, from our empirical evidences, e-learning does not seem to be such a widespread practice.

- Free and low cost courses or subsidising private offer with bonus for selfeduation (by which public institutions may encourage workers investment in “human capital”) result very important (see for examples the Austrian example “The Web academy” initiative).
• Encouraging and recruiting women ICT professional as trainers in ICT courses designed for women. In particular, there are examples showing that female teachers could be an interesting resource in order to strengthen the role model. (See for example the German “Network of female IT trainers”, that organised courses to train female ICT professionals as trainers and built up a network between women IT professional acting as trainers).

• Specific training in new ICT skills should be addressed to women in the so-called “blocked - skill jobs” (ICT jobs and situations in which nothing new can be learnt on the job).

• Continuing training for women after maternity leave and when they come back to work should be improved. In this case, even e-learning may be a useful tool, but only if provided with a strong social component. (See “Web Wise Women” programme and the company’s initiatives “Happy computer” in UK).

• Networks among professionals in different ICT occupations should be diffused for its being a key source for continuous learning. We found one interesting good practice aimed at promoting and consolidating the networking between women working in ICT professions and women in sciences and training (the network “web women” in Austria; the ADA project in Belgium).

Bibliographie


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