MISSING IN ACTION:
WOMEN'S ALTERNATE AND INFORMAL IT LEARNING

by
Shauna Butterwick, University of British Columbia, Vancouver, Canada

Paper presented at the First Annual Conference
Centre for Work and Learning
University of Alberta
September 2003

Abstract: This paper provides preliminary analyses of the first phase of a project which is researching women's informal and alternate learning pathways to jobs in IT.

Introduction

The marginal representation of women in both IT jobs and formal IT training programs has been well documented and has resulted in initiatives that focus mainly on promoting IT careers and science and math courses. Missing and not accounted for are women's informal and alternate learning pathways where women acquire IT knowledge and skills. In this case study, data will be gathered on the learning experiences of women who have learned IT in different contexts including: clerical and office administration work, advocacy and activist work in home and community, the humanities and arts, and community-based alternative IT training programs. This study will help to create a more complete picture and thus more effective and diverse policies and interventions aimed to support women's access to IT training and jobs.

This project has been funded by SSHRC and is part of a research network that is examining the current forms, contents and outcomes of organized educational, training and informal learning activities in Canada's economy, with particular attention given to what differences exist in work and learning patterns across different social groups. Jen Liptrot from the Association for Community Based Training and Education for Women (ACTEW) is the co-investigator of this project. Two research assistants: Danielle Thibodeau and Kaela Jubas have also contributed to this project.

Studies of Women in IT Training and Jobs

According to the literature on women and IT, few are choosing or accessing IT careers--at least through the traditional routes of science, mathematics, and engineering. The proportion of men to women is 72:28, closely resembling the overall ratio of 76:24 in the IT industry itself (Information Technology Association of Canada (ITAC), 2002). Even among those few young women who had the science and math courses and who had entered sciences programs in university, many are not completing their engineering and science degrees (Trache, 2003). The wage gap has also been the focus of research with women's salaries equivalent to 85% of what men earn (American Association of University Women (AAUW), 2000). It has also been noted

that women who enter the IT Sector through informal or nonformal learning pathways have different experiences compared with men with professional credentials.

The low participation of women in IT training and jobs also seems to be getting worse (Kerr, 2003). This is in distinct contrast to the overall increase in women's participation in universities and colleges and the overall increase in students studying computer science generally. Furthermore, the widening gender gap can be found in many countries throughout the world.

Feminist research has also investigated the culture of IT training and jobs. Turkle and Papert (1990) found that women tended to be bricoleurs using pluralistic, alternative and non-conventional approaches to problem solving. Such approaches, however, were discouraged in favor of formal rule-bound paths to solving problems to the extent that women would hide their pluralistic approaches. Within formal training programs, it has been noted that peer interaction is common to programs where women are the majority (Clegg, Trayhurn and Johnson, 2000). Other researchers have also noted how gender operates in the identification of IT skills. Mahony and Van Toen (1990) found that women are often highly skilled 'end users' of IT, but are not considered to be 'real' computer people (i.e. computer programmers).

Building a Conceptual Framework

Various conceptualizations of formal, alternate, informal, and social learning help to frame this study. Sorting learning into neat categories is both useful and problematic; the boundaries and distinctions among and between forms and contexts of learning are often blurred. Livingstone (1999) defines formal schooling as: "an age-related, hierarchically organized, formally constituted system that … provides the major credentialing programs to certify our knowledge competencies" (p. 50). Informal learning, in contrast, "… occurs outside the curricula of institutions providing educational programs, courses or workshops … the basic terms of informal learning are determined by individuals and groups who choose to engage in it" (p. 51). Wildemeersch, Jansen, Vandenabeele and Jans (1998) define social learning as experiential learning that occurs in groups or social systems. There are many other ways to qualify learning beyond informal, formal and social which will be further explored as this project progresses.

How gender (race and class) is operating and structuring relations and experiences of learning is central to this study. A relational approach will be utilized, one that disrupts notions of the differences between women and men as oppositional and biologically determined. As Hayes and Flannery (2000) argue, "gender [is] a type of social relation that is constantly changing, created and recreated in daily interactions as well as on a broader scale through such institutions as school, work and the family" (p. 4). Gendered knowledge systems, they continue, also differ "… by society, culture, ethnic group, locality" (p. 5). Focusing on 'gender/race/class in action' means that attending to how power is operating is a key element of our analysis.

Research Methodology

Life and work history interviews and focus groups with the different 'populations' of women constitute the main method of inquiry. Policy analysis of key documents which reference IT work are ongoing. An online survey will also be developed later in the project. This paper reports on the results of the first phase of the research which involved an expanded literature review, focus groups, and individual interviews.

Our research methodology is also informed by a feminist action orientation, one that "requires us to expose and unsettle gendering and silencing mechanisms wherever encountered and however they intersect with other oppressions. It pushes us to define and share power for the tasks at hand" (Maguire, 2001, p. 66). This is not a dislocated 'view from nowhere', but one informed by our specific location as community and academically located researchers. Our goal is to conduct respectful and reciprocal research where we share our findings throughout the project with our participants and women's IT advocacy organizations as well as with academics.

Focus Group Discussion: "Never Show Them How Hungry You Are"

We met with ten participants who were enrolled in a women's IT community-based training program in a large Canadian city--most were immigrant women of color who had been in Canada for varying lengths of time. Their ages varied from 30 to 60 years of age; three had children. Many came with substantial professional credentials that were, unfortunately, not recognized by Canadian employers and professional associations (these women were taking the training to get a Canadian credential). These women spoke positively about the IT program, its content, as well as job search support and networking opportunities. Large firms, in their experience, were the most difficult places to find work. In their experience, employers' expectations were often unrealistic--they wanted too much for the beginning wages they would provide. These companies seemed to favor young men without family responsibilities and with flexible work schedules. These women spoke of having to hide their anxiety about accessing the Canadian labour market: "never show them how hungry you are". For these women, the notion that IT jobs are 'good jobs' was not necessarily true.

Some participants described forms of agism with some employers telling them they were too qualified. Employers' perceptions of their 'difference' were also obstacles. "If you are seen to be 'culturally different' employers won't hire you because you won't 'fit in'". One of the participants was blocked from a job because her immigrant status made acquiring status/security clearance difficult, if not impossible. In relation to their learning styles, these participants felt that women have a different eye for design and were more patient than men.

Unfortunately, some of the women also spoke of difficulties accessing women's IT organizations. Their sense of urgency about finding work and hoping to get help from these groups was met with some coolness by these organizations. It seemed that these organizations were there to support Canadian women who were already working in the IT sector.

Margaret: "I Learn Through Active Investigation"

Margaret, a 45 year old 'now single' mother of British-Dutch ancestry with two grown children, took one year of college before she dropped out to be a full time mother. While volunteering on a local newspaper, Margaret encountered computers for the first time and discovered that she was both intrigued and had an aptitude for working with this technology. She took a 6 month DOS course at a local community college. After separating from her husband, she moved to a large urban centre and began work as a 'temp' where she encountered Mac computers. Intrigued with their potential, she took another short term training program. Her abilities were noticed by one of the agencies and she was hired to work full time. Her skills quickly accumulated through on-the-job learning augmented with one-on-one sessions with a computer training consultant. Her boss was very supportive and encouraging. She soon expanded her role from office administration to become the computer expert that staff would turn to. She received a promotion and a raise in pay. When the company was taken over by a larger firm, Margaret returned to working as a temp where she linked up with an independent consultant and began doing more project management work. She secured a longer-term contract (1.5 years) as a member of a technical team working on an international AIDS conference, enjoying the daily interactions and chance to learn among peers. Her next job was with a firm in the US. She left that position after several months of sexual harassment and found work with a large IT company. She describes this job as a highlight of her IT career: decent and regular pay,

benefits, support for training, and lots of recognition and satisfaction. While in the US she also took further training in project management. When the IT sector went into crisis, she lost her position and returned to Canada where she has continued to work as an independent consultant. She has also developed a health-related software program which she hopes to sell.

Margaret describes her approach to learning as active investigation. She finds that, because of her logical thinking, she 'clicks' with computers. "It looks complicated …but once you know what it does, it's really easy". She learns from her errors and is constantly pushing herself to improve. She often figures things out on her own, sometimes turning to computer manuals and others for help, and as noted, she has taken several formal computer training courses. She also teaches others what she knows and finds she is a skilled translator of technical language into understandable terms, often using analogies. Margaret noted that her IT learning pathway has also been about learning how to trust her own skills, get her ideas across, and be listened to. As noted, some of her supervisors were supportive. Other employers feel threatened by what Margaret describes as her strong personality and direct approach. "I'm a strong woman and they can sense that … they need, for their own personal comfort, to have a woman who is not going to come up with too many ideas".

She has also found that some will not recognize the skills she has acquired though informal learning. Margaret expressed frustration with employers who have commented critically on the diversity of jobs she has had, questioning why she has not stayed with one company. And, as noted, she has faced sexual harassment. In her experience, she is less successful with job searches that involve sending out her resume ('cold calling'); her lack of formal credentials on her CV becomes more of a barrier. Margaret is most successful in finding work through networking. For Margaret, IT is still masculine territory "…a women … is automatically not to be trusted and will be tested, whereas [with] a man moving into the same space, there would be an assumption of skill and confidence". She describes her IT knowledge set as a good balance of 'hard' and 'soft' skills. Margaret has thought about further formal training, but finds she cannot afford to stop work. Even enrolling in a part-time program, given her long work hours leaving her with little energy at the end of the day, does not seem possible.

Salima: "I Did it My Way"

Salima, a 37 year single woman of East Indian ancestry, entered a computer science university program in the early 1980s (she was one of two women in the entire class). After struggling for three years, she dropped out before completing her final year. Having excelled in math in high school, she expected to do well. Much to her surprise, she found herself failing courses. "All the boys were getting it … but I wasn't and I couldn't talk to anyone [about my experiences]…I eventually realized that I learn differently". She describes her education in this program as generally poor; there were a few 'good' professors--those who used teams and had the students work on real problems. She recalls fondly one professor, also Indo-Canadian, who went out of his way to encourage her. After leaving university, she began work with a telecommunications firm where she realized that her university computer education had not prepared her for her job. "They said [her professors] it was all about programs, but it's not". At first she feared that she would be fired, but, like Margaret, she learned quickly. She also encountered Macs for the first time which she found "…edgy, new, it felt like Star Trek". While working full time, she enrolled part-time in computer and business courses at a local poly-technical institute. She excelled in the program finding the smaller classes, more mature

students, and an applied approach better suited to her learning. Like Margaret, Salima lost her position when the telecommunications firm downsized during the IT economic collapse. She then found work in an investment agency. As she continued to work with IT, she also discovered her aptitude and love of teaching IT and started to instruct night school computer courses. In her second job she quickly became a team leader, but encountered resistance from her boss. Like Margaret her directness was not appreciated by her supervisor. "I was too strong of a personality and people in authority, especially men, get challenged by it. I would challenge how things were done…". Her next career move involved developing her own business which she described as the only route which allowed her to play and experiment. "If I was an employee, I wouldn't get to play with the technology the way I wanted to … I like 'outside the box' stuff". She continues to work as an independent consultant which she combines with temping for office administration kinds of jobs.

Like Margaret, Salima learns best when solving problems on the job. Observing others is also a key element in her approach to learning. "I watched him [computer technician] do everything and after that I had no questions". She also frequently uses the Internet to find information on IT products. In addition to acquiring knowledge of soft and hardware skills, learning about management (what she called 'soft' skills) was a key component. "I don't really need to know the stuff, I just need to know that the person doing it knows. You don't have to touch the machines [to] still play a prominent role". Project management became an area of great interest for her. Here she found that helping others to determine their needs, and how to analyse and plan were her strengths. "People think technology will fix the problem, but it just makes [them] more evident". Like Margaret, Salima describes one of her strengths as seeing the big picture and her ability to 'translate". "I listen and then I translate it into technical terms".

Like Margaret, Salima has encountered a mix of support and obstacles to having her IT skills and knowledge recognized. When describing her project management skills, Salima remarked that her skills are initially not seen or rewarded, "until the shit hits the fan…'thank god you were here' is what they often say". Salima has found resistance from what she calls the 'teckies' because she often operates as a referee between them and decision makers. She has observed that project managers, those with 'soft' skills, are the first to go during industry downturns. She has also noted the persistence of both 'glass ceilings' as well as 'glass walls'; she has been cut off from making both vertical and lateral moves because she cannot access some male networks. The shifting meaning of IT work is another challenge that Salima has faced. Sometimes she is perceived to be an IT person, and in other contexts, she is in 'operations'. Salima has noted that men are more frequently moved into decision making roles, while women do the 'grunt work'. She also noted that "… when men face technology problems they become angry, for women, they think they're stupid". At this stage in her career, she is somewhat bored with technology {"it doesn't feel like Star Trek anymore") and is searching for something new, a place to work 'outside the box' where she can play and have fun. She loves to teach and will continue to do that.

Endnote:

These participants' alternate learning pathways include a mix of both formal and informal learning which are in turn shaped by the complex interweaving of their gender, race and class locations. Teaching others what skills they have learned is also part of their work as bricoleurs. Although many of these participants have a fair amount of formal training, this fact seems to be

ignored by some employers, particularly during downturns in the IT sector and when assessing the foreign credentials of immigrant women of color. These women experienced barriers to moving both vertically and horizontally, adding another dimension to the oft-mentioned 'glass ceiling'. These women's family responsibilities, immigration histories, and *relative* lack of formal credentials come together to create a 'snakes and ladders' job history, one regarded by some employers as problematic. Being different, especially for immigrant women of color, was a barrier to a labour market that appears to desire a homogeneous workforce.

Gender, race and class are indeed 'at work' in these women's work histories. Much deeper analysis of these initial conversations will continue as more data is gathered.

References

American Association of University Women (AAUW) (December 2000). *Tech-Savvy: Educating Girls in the New Computer Age.*

Clegg, Sue & Trayhurn, Deborah, & Johnson, Andrea (2000). Not just for men: A case study of information technology in higher education. *Higher Education*, 40, 123-145.

Hayes, Elizabeth and Flannery, Daniele (2000). *Women as learners: The significance of gender in adult learning*. San Francisco, CA: Jossey-Bass.

Kerr, A. (2003). Group moves to boost women in IT – Program aimsm to reverse trend that is seeing falling interest in sector by females. *The Globe and Mail*, Monday, May 26, 2003, B14.

Livingstone, David (1999). Exploring the icebergs of adult learning: Findings of the first Canadian survey of informal learning practices. *Canadian Journal for the Study of Adult Education*, 3(2), 49-72.

Information Technology Association of Canada (ITAC), *Meeting the Skills Needs of Ontario's Technology Sector*, May 6, 2002

Maguire, Patricia (2001). Uneven ground: Feminisms and action research. In P. Reason & H. Bradbury (Eds.) *Handbook of Action Research – Participative Inquiry and Practice*. London: SAGE.

Mahoney, K. & van Toen, B. (1990). Mathematical formalism as a means of occupational closure in computing – why 'hard' computing tends to exclude women. *Gender and Education*. 2(3), 319-331.

Trache, Maria (2003). *Post-secondary paths in science for B.C. young women and men*. Unpublished Masters Thesis, Department of Educational Studies (Higher Education), University of British Columbia.

Turkle, S. & Papert, S. (1990). Epistemological pluralism: styles and voices within the computer culture. *Signs: Journal of Women in Culture and Society*, 16(1), 128-157.